

DispenseMate® Series

DispenseMate® 580 Dispensing System

User Guide



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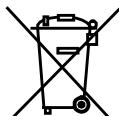
Contact Us

Nordson ASYMTEK welcomes requests for information, comments, and inquiries about its products. Please contact us using the information below:

	
Headquarters	2762 Loker Avenue West Carlsbad, CA 92010-6603 USA
Toll Free:	1-800-ASYMTEK (1-800-279-6835)
Tel:	+1-760-431-1919
Fax:	+1-760-431-2678
E-mail:	info@nordsonasymtek.com
Website:	www.nordsonasymtek.com
Technical Support	
USA:	1-800-ASYMTEK (1-800-279-6835)
Other regions:	www.nordsonasymtek.com Tech Support

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1 Introduction

1.1 Overview

The DispenseMate 580 (D-580) Series Dispensing Systems bring new dispensing power to a compact package. Many of today's advanced automated dispensing features are now available in a bench top format. The D-580 Series platform utilizes the same dispense control technology as some of Nordson ASYMTEK's most advanced dispensing systems. This manual is intended primarily as a reference for production operators. However, process engineers and service technicians unfamiliar with Nordson ASYMTEK products may also find this manual useful as a general introduction to the system. This section introduces the DispenseMate 580 Series Dispensing Systems and describes system configuration, lists the standard and optional features, illustrates component location, and explains the function of the components on the dispensing system. The following topics are covered:

- Safety First
- Getting Started
- Standard Equipment
- Optional Equipment
- Dispensing Valves
- Front View Features
- Rear View Features

Two models of the DispenseMate Dispensing Systems are available with different size dispensing areas; the D-583 and D-585 Dispensing Systems. Refer to [Section 6 - Specifications](#) for additional information on each system.

Model	Total XY Travel
DispenseMate 583	325 x 325 mm, or 12.8 x 12.8-inch
DispenseMate 585	525 x 525 mm, or 20.7 x 20.7-inch

The system utilizes Nordson ASYMTEK's Fluidmove® for Windows XP (FmXP) software, the same industry-proven software package used on all Nordson ASYMTEK dispensing systems. FmXP and the DispenseMate's flexible architecture makes it easy for customers to upgrade as needed, and provides the portability to develop programs offline that can be transferred to other sites or moved to inline systems. CAD Import software and Automatic Pattern Recognition are also available.

Recommended applications include:

- Solder Paste
- Conductive Adhesives
- Surface Mount Adhesives
- Encapsulation
- Dam & Fill
- Solder Mask
- Bonding
- Lid Sealing
- Underfill
- Gasketing

Configured with the DispenseJet® Series DJ-9000, the D-580 Series Dispensing Systems offer the latest, most advanced dispensing technology in a cost-effective system.



NOTE Contact your Nordson ASYMTEK representative for more information on the DispenseJet® Series DJ-9000.

1.2 Safety First

Operation of the D-580 Series Dispensing System involves air pressure, electrical power, mechanical devices, and the use of hazardous materials. It is essential that every person servicing or operating the dispensing system fully understands all hazards, risks, and safety precautions. Refer to [Section 2 - Safety](#) for additional information.



WARNING!



CAUTION!

Consult the Material Safety Data Sheet (MSDS) for all fluids used with the dispensing system. The MSDS provides material usage instructions, disposal instructions, and safety precautions.

1.3 Getting Started

1.3.1 Manuals Supplied

The DispenseMate 580 Series Dispensing System arrives with manuals for installation and operation of major system components and software. For some system components, you may receive Original Equipment Manufacturer (OEM) manuals. Generally, these OEM manuals are only needed for reference and advanced troubleshooting. Consult only Nordson ASYMTEK manuals unless directed to do otherwise by the manuals themselves or by the Nordson ASYMTEK Technical Service Group.

Below is a sample list of manuals that may be shipped with your dispensing system. The optional manuals listed may or may not be included depending on system configuration.

- DispenseMate 580 Series Dispensing System User Guide
- Fluidmove for Windows XP User Guide
- Dispensing Valve Installation and Operations Manual (specific to your valve)
- Original Equipment Manufacturer Manuals (as applicable)

1.3.2 Training

In order to optimize the full capabilities and features of your dispensing system, Nordson ASYMTEK recommends certification for all operators, technicians, and engineers using, programming, and servicing the dispensing system.

Nordson ASYMTEK offers several levels of training courses to enable customer operators, technicians, and engineers to become fully certified in dispensing system safety, operation, hardware, software, and fluid applications. For more information on training courses and certification, contact your Nordson ASYMTEK representative.

1.4 Standard Equipment

1.4.1 Computer System

The Computer System consists of a laptop PC, mouse, and connecting cables. It runs Fluidmove for Windows XP (FmXP) software.

1.4.2 Fluidmove for Windows XP Software

Fluidmove for Windows XP (FmXP) is Nordson ASYMTEK-proprietary software for use in a Windows XP environment, developed specifically for dispensing applications.

1.4.3 Tooling Plate

The Tooling Plate is mounted to the Y-axis and secures the workpiece for batch system operations. The Tooling Plate allows you to add specific fixturing or mounting hardware for your workpiece.

1.4.4 Digital Gauges

The D-580 Series Dispensing System features a Digital Fluid Pressure Gauge for high accuracy and easy setup. It precisely regulates the air pressure required for fluid pressure control. A separate regulator and gauge is used for regulating valve/tooling air pressure.

1.4.5 Integral Height Sensor

The Integral Height Sensor allows increased positional accuracy in fluid dispensing by automatically controlling the gap of the dispense tip to the surface of your workpiece.

1.5 Optional Equipment

1.5.1 Advanced Dispensing Package (ADP)

The Advanced Dispensing Package consists of a camera, lens, light source, and a Single Dispense Head Controller (SDHC). This advanced system uses fiducial patterns, corner or edge detection algorithms, skew correction, and part skipping to locate dispensing sites. Two types of vision systems are available; a Fixed Height Pattern Recognition System that is independent of Z-height, and a Variable Height Pattern Recognition System that relies on the position of the Z-head for focus. Integration of this optional system allows the user to take advantage of advanced features such as Dynamic Dispense Control (DDC) and precise temperature control of fluid dispensed.

1.5.2 CAD Import

The D-580 Series Dispensing System features data-driven, offline programming with the CAD Import program using CAD-generated data.

1.5.3 Service Station

The Service Station automatically controls two dispensing routines that affect the final quality of the fluid delivery. It consists of a vacuum purge cup, which helps maintain a clean dispense tip (primarily for the DispenseJet), and a tactile needle sensor, which aids in accurately determining needle/nozzle tip height during setup.

1.5.4 Enclosure

The Enclosure provides a complete enclosure of the dispensing system, thus preventing inadvertent or hazardous contact to a moving mechanism by an operator or technician.

1.6 Dispensing Valves

The D-580 Series Dispensing Systems support the following Nordson ASYMTEK jets, pumps, and valves. Refer to the *DispenseMate 580 Series Installation Guide* for additional information.

Dispensing Valve Configuration			
Valve Model	Valve Air Connection	Fluid Pressure Connection	Cooling Air Connection
DJ-9000/DJ-2100 DispenseJet® Series	Black fitting	Clear fitting	Green fitting
DV-7000/DV-8000 Heli-Flow® Pumps*	N/A	Clear fitting	
DV-01	N/A	Clear fitting	
DV-07	Black fitting	Clear fitting	
DV-03HPA	Black fitting	Clear fitting	
DV-05A	Black fitting	Clear fitting	
DV-07	Black fitting	Clear fitting	
DV-09	Black fitting	Clear fitting	

* When using the DV-7000 or DV-8000 valve, make sure that the Valve Selector switch, DIP Switch 5 located on the main board outside the electronics pan (Figure 1-2), is set to the proper position. The default setting is DV-8000 (up). Switch 5 setting does not affect any of the other valves.

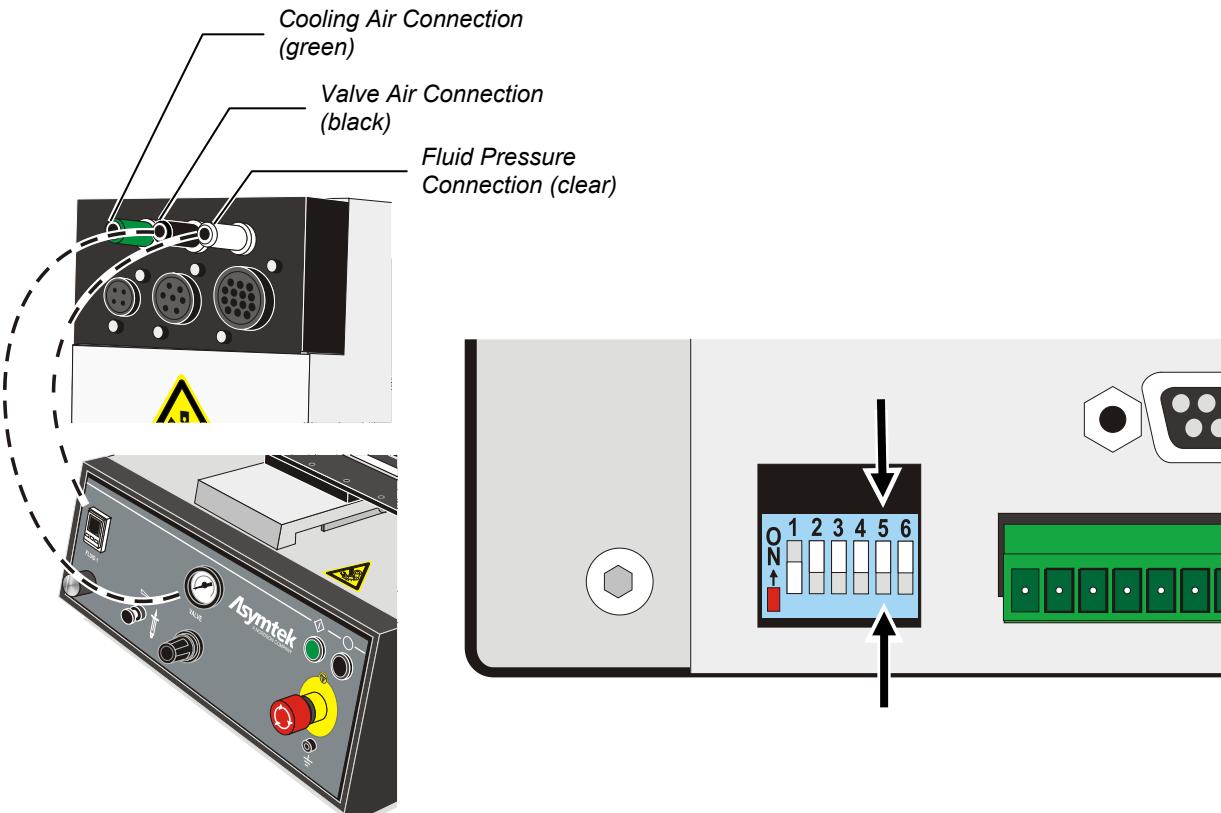


Figure 1-1 Valve Connections

Figure 1-2 Valve Selector Switch

1.7 Front View Features

The figures in this section show views and features of the dispensing system. Callouts locate major components, options, and switches seen in each illustration. Detailed operating instructions for some of these features are treated in other sections of this manual. Front view features are shown in Figure 1-3.

Z-Head Dispenser Connections

All dispensing valves and dispensing options mounted to the Z-axis are connected through this area.

Cable Track

The Cable Track houses electrical cables and pneumatic tubing to the Z-head.

Start Button

The Start Button puts the dispensing system in a power-on state.

Off Button

The Off Button shuts off power to the dispensing system during normal operations.

Emergency Machine Off

The Emergency Machine Off (EMO) button is a built-in safety feature located on the front panel of the dispensing system. Refer to [Section 2 - Safety](#) for additional information.

ESD Grounding Strap Connector

Grounding Straps worn by the operator or technician plug into this jack to prevent electrostatic discharge (ESD) damage to workpieces and dispensing system electronics during dispensing operations and servicing.

Vacuum Control

The Vacuum Control allows low viscosity fluids, even water, to be consistently dispensed without dripping between cycles. The vacuum exerts a negative pressure on the fluid pressure pneumatics line when the valve is turned off.

Fluid Pressure Regulator and Gauge

The Fluid Pressure Regulator and Gauge set supplies very precisely regulated air to the fluid syringe.

Valve Air Pressure Regulator and Gauge

The Valve Air Pressure Regulator and Gauge set supplies regulated air pressure to the dispensing valve.

Computer System

The Computer System (Figure 1-6) consists of a laptop PC and connecting cables. An external mouse is also provided for your convenience.

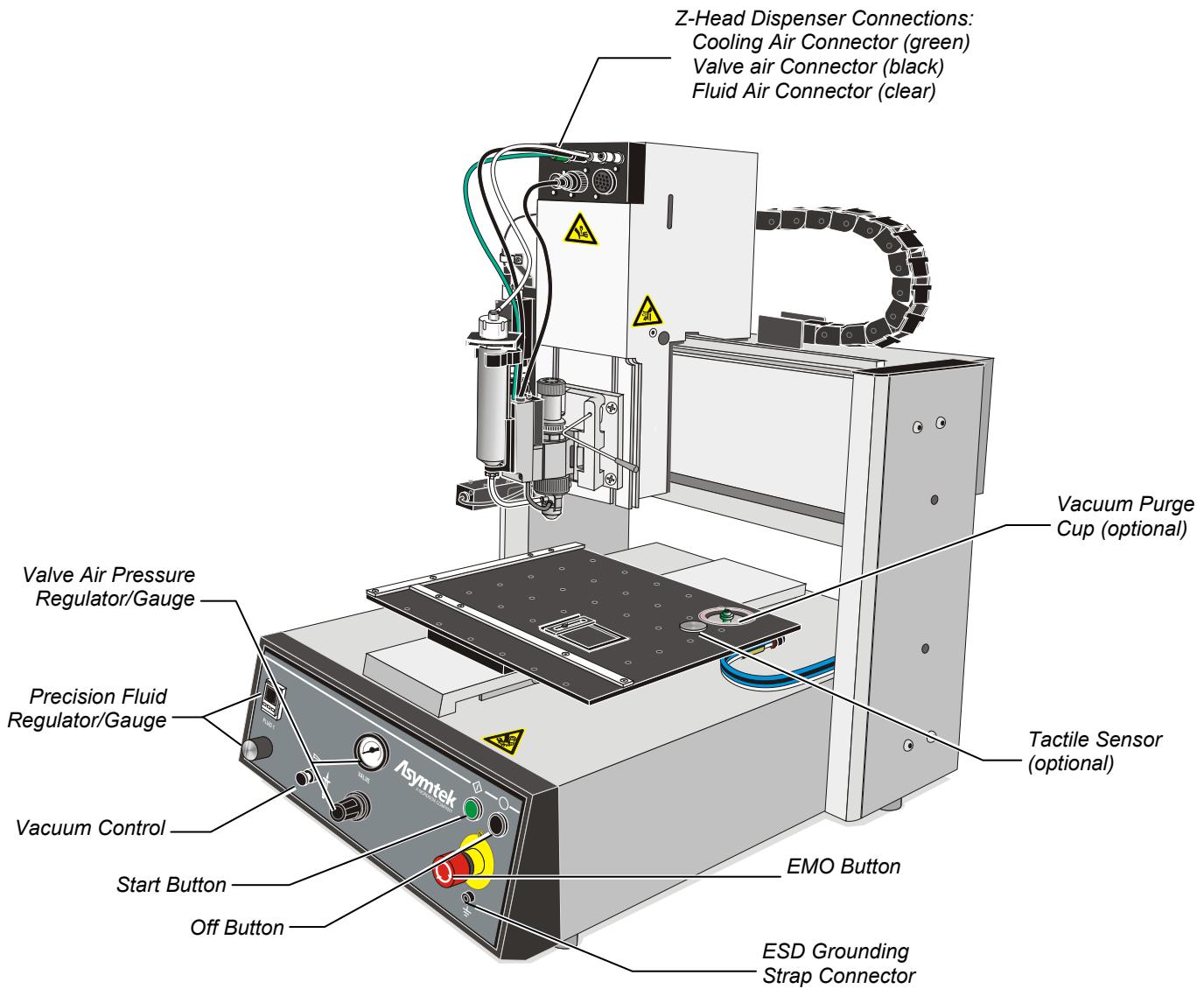


Figure 1-3 Front View

1.7.1 Dispensing Area

The dispensing head, valve, camera, height sensor, and tooling plate are located in the Dispensing Area (Figure 1-4).

Vision System

The compact, high resolution, black and white camera and its vibration resistant lens are part of the Vision System. This advanced camera communicates with the computer through an integral 1000Mbps Giga-Ethernet connection. It is mounted on the dispensing head and is used to view work surfaces.

Dispensing Valve

The Dispensing Valve controls or regulates the flow of material from a pressurized reservoir, such as a syringe. Devices include valves, pumps, and jets.

Tooling Plate

The Tooling Plate secures the workpiece for batch system operations.

Height Sensor

The Height Sensor is a device that measures substrate height and sends a signal to the system computer. The height information is used to position the dispensing needle at an exact distance above the workpiece surface.

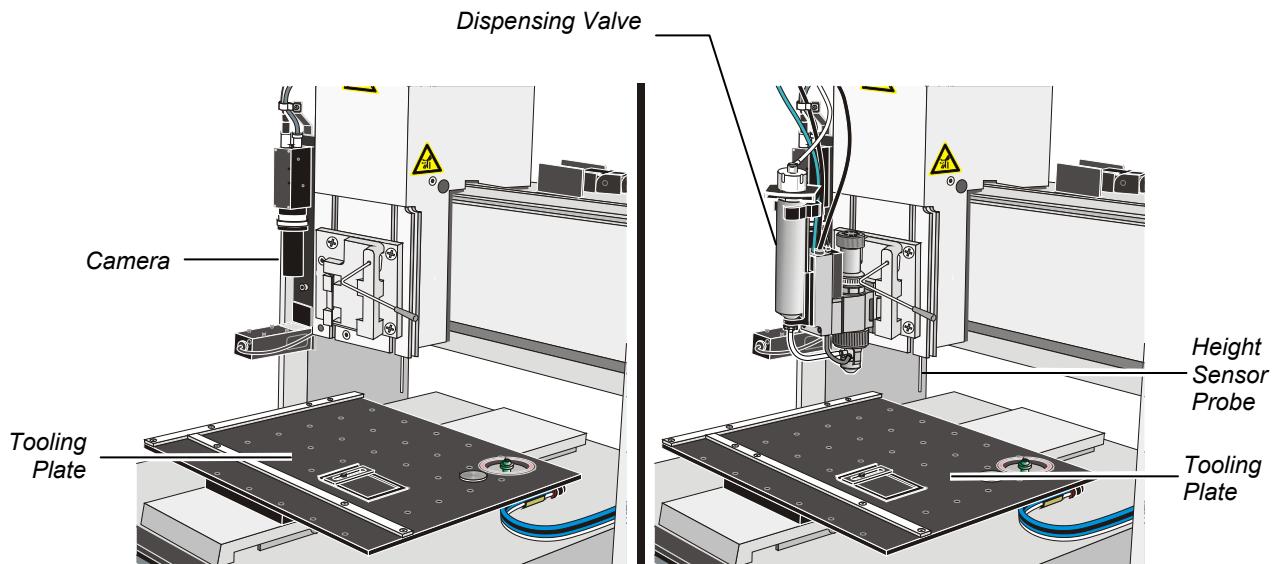


Figure 1-4 Dispensing Area (Close Up)

1.8 Rear View Features

Rear View features of the D-580 Series Dispensing Systems are shown in Figure 1-5. Callouts locate major components, options, and switches seen in each illustration. Detailed operating instructions for some of these features are treated in other sections of this manual.

RS232 Port

The RS232 Port connects the DispenseMate to the internal USB network which communicates with the laptop computer and FmXP.

Discrete I/O

There are four digital I/O's, one analog I/O, and two 24-VDC solenoid drivers. The Discrete I/O's are used in conjunction with the control of any dispensing options or devices that require a position reference within a program.

General Purpose Output Connector

There are 16 General Purpose (GP) Outputs. They are either sinking or sourcing. The GP Outputs are used in conjunction with the control of any dispensing options or devices that require a timing reference within a program.

General Purpose Input Connector

There are 16 General Purpose (GP) Inputs. The GP Inputs are 24 VDC, sink to ground. The GP Inputs are used in conjunction with the control of any dispensing option or device that requires a timing reference within a program.

Interlock

If the Interlock signal is interrupted, the Interlock immediately stops all dispensing activity to protect the operator from injury. Refer to [Section 2 - Safety](#) for additional information.

Main Air Inlet

The Main Air Inlet connects to the facility air supply. Refer to [6.4 Dispensing System Facility Requirements](#) for system requirements.

Main Power Inlet

The Main Power Inlet connects the dispensing system to the facility power supply. The dispensing system has an automatic sensing power supply integrated into the main power supply. The dispensing system uses a main power supply between 100Vac to 240Vac (+/-10%), 50-60 Hz.

Main Power Circuit Breaker

The Main Power Circuit Breaker is the main power switch for the dispensing system. It protects the dispensing system from facility power surges and controls the flow of facility AC power supplied to the dispensing system.

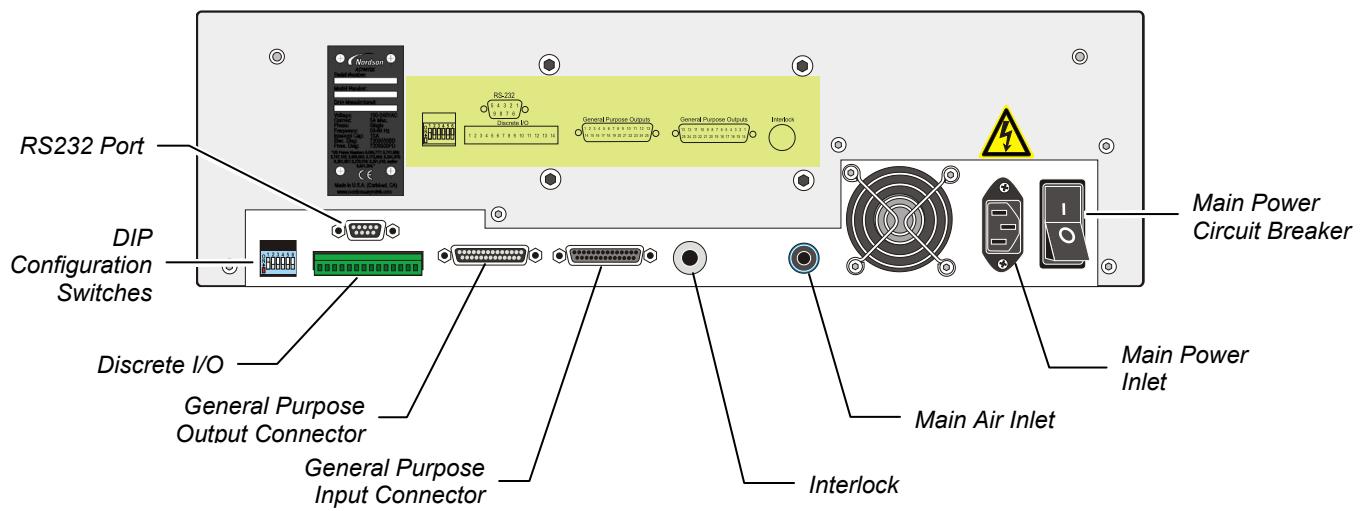


Figure 1-5 Rear View Features



Figure 1-6 Computer Connections

2 Safety

2.1 Overview

This section is intended to provide basic safety information necessary for operating and servicing the D-580 Series Dispensing Systems. This section covers the following topics:

- Facility Requirements
- Intended Use
- Basic Safety Precautions and Practices
- Electrostatic Discharge (ESD) Precautions
- Safety Warning Labels
- Emergency Shutdown
- Lockout of Electrical and Pneumatic Energy
- Interlock

To further optimize safe dispensing system operation, precautions and recommended practices are included with the procedures throughout this manual.



WARNING!



CAUTION!

Unsafe equipment conditions can result in personal injury or property damage. Failure to properly operate and maintain the system in accordance with this manual may jeopardize the built-in safety features.



NOTE Safety is considered a joint responsibility between the original equipment manufacturer (Nordson ASYMTEK) and the end-user (owner). All safety precautions and practices should be in accordance with local regulations and facility practice.

2.2 Facility Requirements

To ensure optimal performance and safety, it is necessary to install the dispensing system in a facility that meets the necessary requirements. Refer to [6.4 Dispensing System Facility Requirements](#). If you have any questions, please contact Nordson ASYMTEK Technical Support.

2.3 Intended Use

Use of Nordson ASYMTEK equipment in ways other than those described in the documentation supplied with the equipment may result in injury to persons or damage to property. Some examples of unintended use of equipment include:

- Using incompatible materials
- Making unauthorized modifications
- Removing or bypassing safety guards or interlocks
- Using incompatible or damaged parts
- Using unapproved auxiliary equipment
- Operating equipment in excess of maximum ratings

2.4 Basic Safety Precautions and Practices

Compliance with the following recommended precautions and practices reduces the risk of personal injury or damage to property during dispensing system operation and maintenance.



WARNING!



CAUTION!

Failure to comply with any of the safety recommendations could cause serious injury to the user or damage to the dispensing system.

2.4.1 Safety of Personnel

- Only trained personnel should be permitted to perform operation, maintenance, and troubleshooting procedures.
- There should always be a second person present when performing maintenance on a system under power.
- Locate, identify, and obey all safety warning labels on the system before initial use. Refer to [2.6 Safety Warning Labels](#).
- Immediately push the red Emergency Machine Off (EMO) button if personnel are in danger of being injured. Refer to [2.7 Emergency Shutdown](#).
- Lock out and tag out power and disconnect facility air to the dispensing system before performing service or maintenance on the dispensing system. Refer to [2.8 Lockout of Electrical and Pneumatic Energy](#) for details.
- Do not wear loose clothing or jewelry while operating the system. Tie back long hair to prevent it from being caught in moving parts.
- Do not touch the dispensing head or other moving parts while the dispensing system is operating.
- Always wear appropriate personal protective equipment (PPE) as recommended by facility safety practices and the material manufacturer's MSDS.
- Make sure that the main power cable and main air supply hose are securely connected before operating the dispensing system.
- If in a confined room, ensure adequate and uninterrupted air ventilation, heating, and cooling meet environmental stress limits of personnel and the dispensing system.
- Where volatile organic compound (VOC) emissions can exceed safe limits, facility ventilation and filtration systems must be operational.
- Provide adequate space around the dispensing system to allow for movement of maintenance and service personnel. Allow space for access doors and service panels to open fully.
- Make sure all facility power sources are safely grounded.
- Routinely inspect all air hoses and electrical cables for damage.
- Make sure that power cables and air supply hoses do not cross a walkway or aisle.
- Before attempting to lift a load, take into consideration facility lifting and transport precautions.
- Maintain a clean and orderly work area.

2.4.2 Material Safety

- Follow MSDS recommendations for the proper handling, cleanup, and disposal of hazardous materials.
- Know the MSDS recommendations for treatment of injury resulting from exposure to hazardous materials.
- When working with multiple fluids, refer to the MSDS to ensure the materials are compatible.

2.4.3 Preventing Dispensing System and Workpiece Damage

- Immediately push the **EMO** button if the dispensing system or a workpiece is in danger of being damaged.
- Use standard Electrostatic Discharge (ESD) precautions when working near sensitive components. Always wear a grounding strap and connect it to the ESD ground before handling workpieces.
- Immediately contain and clean up any caustic or conductive fluid spills as recommended in the material manufacturer's MSDS. If fluid gets into internal portions of the machine, immediately contact Nordson ASYMTEK Technical Support.
- Follow all recommended system maintenance procedures.
- Always keep the dispensing area clear of any fallen workpieces or obstacles.
- Ensure that no air intakes or exhaust grilles are blocked when the system is in operation.

2.5 Electrostatic Discharge (ESD) Precautions



CAUTION! Personnel operating, maintaining, or servicing the dispensing system must follow ESD precautions. Failure to do so could cause severe damage to dispensing system electronic components and/or workpieces.

Electrostatic Discharge (ESD), also known as “static discharge”, is the sudden transfer of electricity from one object or person to another object or person. ESD can cause severe, undetectable damage to electronic printed wiring boards (PWBs), parts, and assemblies. Precautions, such as wearing grounding straps, must be taken by the operator or technician to prevent ESD damage while working around sensitive components.

ESD is generally increased by the following conditions:

- low humidity (dry air)
- movement across carpets
- touching of plastics, synthetics, and insulators

Most of the time, you cannot detect the presence of ESD. You may feel a slight shock when touching an object when ESD is particularly high, but even imperceptible levels of ESD can damage electronic components. Assume that there is always ESD danger present in your environment.

ESD damage can occur at any time when you are assembling, testing, or handling electronic components. The following are recommended ESD safety precautions to be used whenever handling electronic components, parts, or assemblies:

- Wear a grounding wrist strap while performing all tasks.
- If a wrist strap is not available, always touch a bare metal, grounded surface to discharge built up electricity before touching the electronic components.
- Never allow anyone to enter the work area unless they are wearing a grounding wrist strap.
- Use a dissipative floor mat under the work area.
- Use only ESD-approved equipment.
- Ground all tools and equipment, if possible.
- Keep the work area clean and clear of items that can cause ESD, such as packing foam and plastic envelopes.
- Store all electronic printed circuit boards (PCBs) and assemblies in static-safe bags.
- Report any instances of ESD damage or potential damage to your supervisor immediately.

2.6 Safety Warning Labels

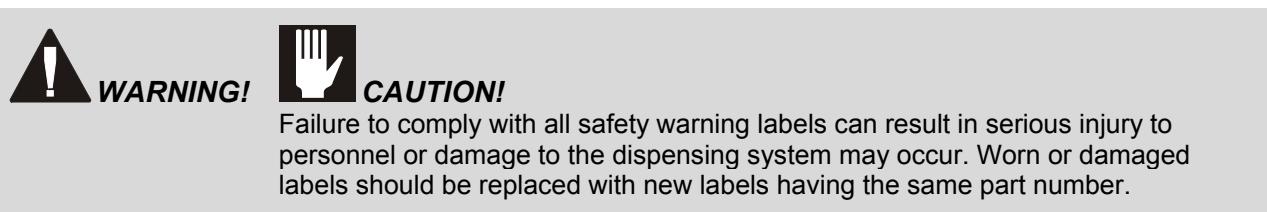
Safety warning labels affixed to the dispensing systems point out potential hazardous areas and remind personnel to take necessary safety precautions. Table 2-1 describes safety labels that may be affixed to the dispensing system. Locations of these warning labels are shown in Figure 2-1 and Figure 2-2.

Table 2-1 Safety Warning Labels

Warning Type	Symbol	Part Number ⁽¹⁾	Hazard
Electrical (Shock Hazard)		70-0116-00 ⁽¹⁾ or 70-0050-00 ⁽²⁾	This label warns of a high-voltage component that can cause shock, burn, or death. Use extreme caution when working in or around these areas. Disconnect and lock out power before servicing.
Heavy Object (Lifting Hazard)		70-0118-00 ⁽¹⁾ or 196666 ⁽²⁾	This label warns that the labeled component is heavy and can cause muscle strain or back injury to personnel trying to lift it.
Pinch Hazard		198883	
Middle Pinch Hazard		7200879	These labels warn of moving parts that can cause serious injury to hands and fingers. Disconnect and lock out power before servicing.
Left Pinch Hazard		7200878	
Right Pinch Hazard		7200877	

Notes: (1) Rectangular labels with symbols and text.

(2) Triangular labels with symbols only.



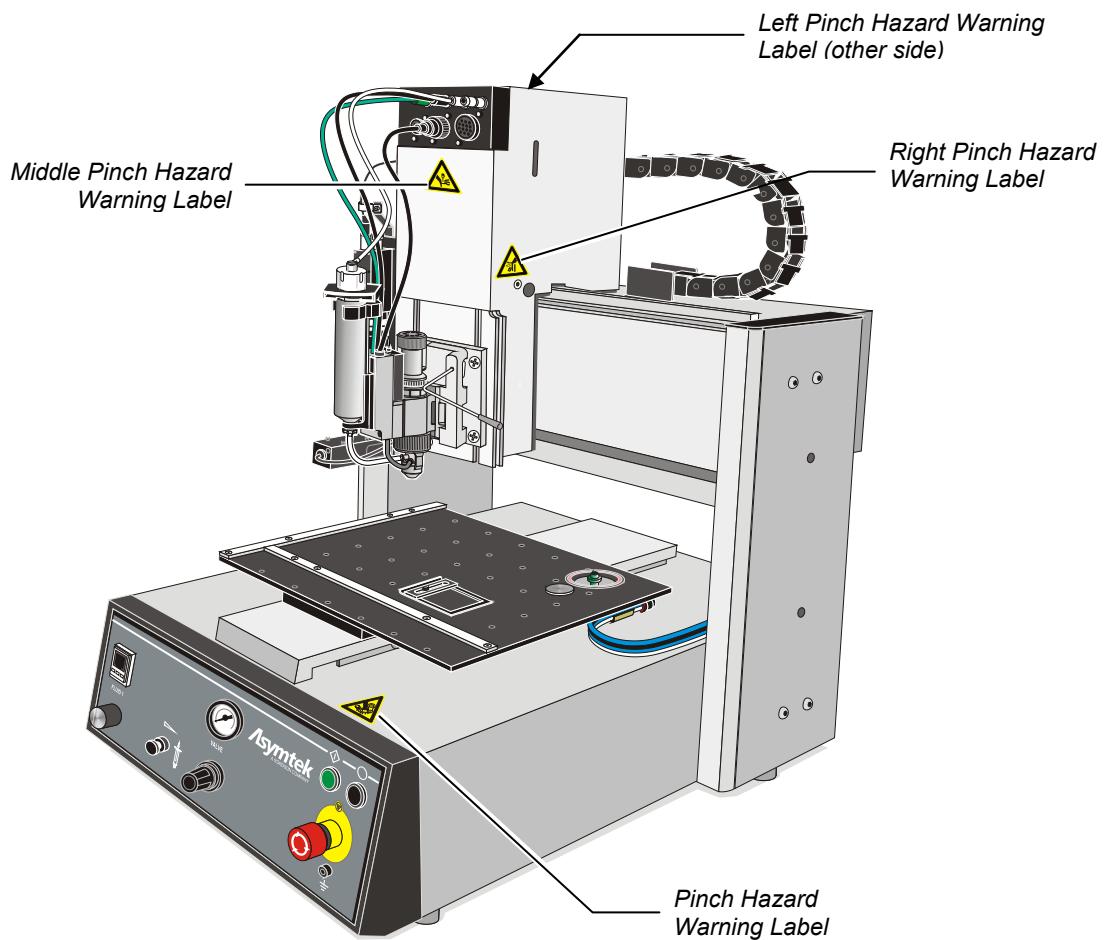


Figure 2-1 Safety Warning Labels, Front View

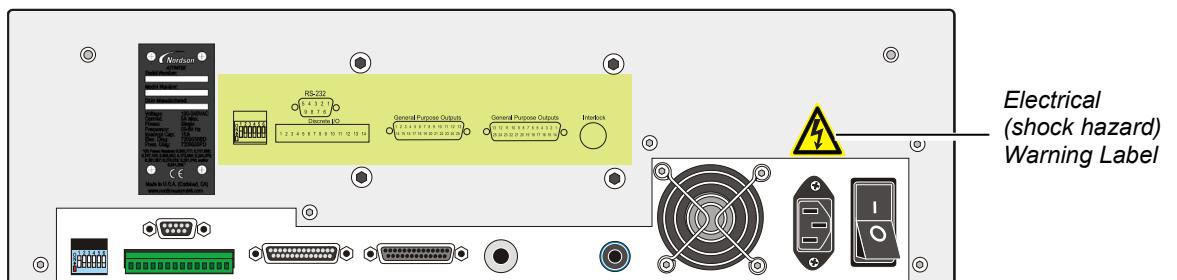


Figure 2-2 Safety Warning Labels, Rear View

2.7 Emergency Shutdown

In the event of an emergency or malfunction, press the Emergency Machine Off (EMO) button. The EMO is the large red button located on the front panel of the dispensing system (Figure 2-3). Activating the EMO vents all pressure in the pneumatic system, de-energizes the servo power supply capacitors, and cuts power to all components except the computer and monitor.



TIP

If the operator or technician is unable to reach the EMO button, the main power circuit breaker (Figure 2-3), which is located on the back of the system, can be used for emergency shutdown.

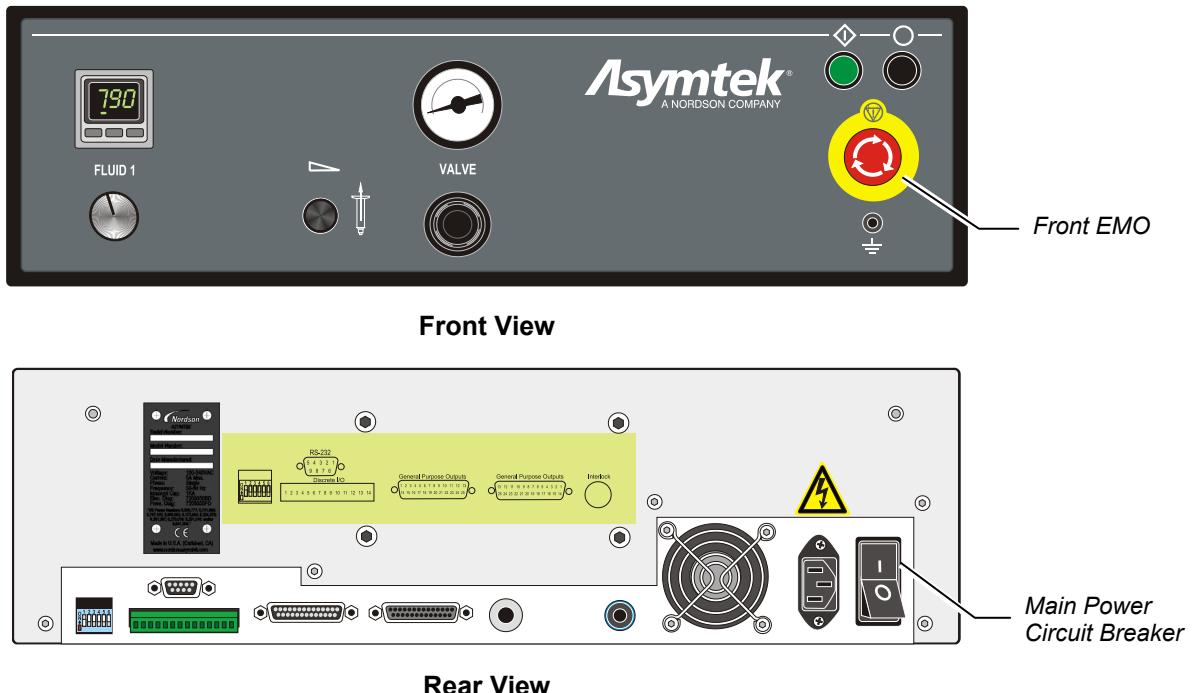


Figure 2-3 EMO/Main Power Circuit Breaker Locations

2.7.1 Emergency Shutdown Situations



WARNING! In an emergency, failure to completely shut down power to the dispensing system can cause serious injury to the user and/or damage to the dispensing system.

As a minimum, activate the EMO in the following situations:

- If anyone is in immediate danger of being injured by moving parts, hazardous materials, or electrical shock.
- If valuable dispensing system components or the workpieces are in danger of being damaged. This can include:
 - Physical damage to the dispensing valve or workpiece by unexpected dispensing head movement.
 - Electrical damage to the dispensing system.

2.7.2 Emergency Shutdown Recovery



WARNING! Do not restart the dispensing operation until the condition that caused the emergency shutdown has been remedied. Failure to comply could cause serious injury to the user and/or serious damage to the dispensing system.



NOTE If the main power circuit breaker has been tripped, you will need to restart the dispensing system as specified in [3.5 Startup](#).

To recover after an emergency shutdown:

1. Locate and remedy the cause of the emergency shutdown. If necessary, refer to [Section 5 -Troubleshooting](#).
2. If applicable, close the dispensing area doors.
3. Turn the EMO knob counterclockwise until it pops back into position.
4. Press the **Start (I)** button on the Control Panel.
5. Restart your dispensing program. Refer to [3.12 Starting a Production Run](#).

2.8 Lockout of Electrical and Pneumatic Energy

2.8.1 Lock Out/Tag Out of AC Power



WARNING!



CAUTION!

Lock out and tag out electrical power and pneumatic pressure when performing service or maintenance work on the dispensing system. Failure to do so could cause serious injury to the user and/or serious damage to the dispensing system.

To lock out/tag out AC power:

1. Verify that all dispensing motion has stopped.
2. Turn the main power circuit breaker on the rear of the system to the **OFF (0)** position.
3. Unplug the main power cable from the facility source and lock it in a locked box.
4. Place a warning tag on the main power inlet.



NOTE Warning tags document the name of the technician taking the equipment out of operation, the date, and other facility-required information. It is a warning that the equipment cannot be put back into operation until the authorized technician has removed the tag.

To lock out/tag out pneumatic pressure:

1. Verify that all dispensing motion has stopped.
2. Lock out and tag out AC power as specified earlier in this section.
 - When the power is shut off, the main air solenoid valve shuts off and all air pressure inside the dispensing system is automatically released.
3. Locate the main air pressure regulator adjustment knob.
4. Unlock the knob by pulling it out and then rotate the main pressure regulator adjustment knob counterclockwise until the main air pressure gauge registers 0 psi.
5. Disconnect the facility air supply hose from the main air inlet and place a warning tag on the main air inlet.

2.9 Interlock

When the interlock circuit is open, the Interlock immediately stops all dispensing activity to protect the operator from injury. The Interlock is an electronic connection to the motor processor and power, as well as the discreet and general purpose I/O and the solenoid drivers, that immediately cuts the power to any motion and to any peripheral (I/O or solenoid driver). The intended use of the interlock is to prevent physical injury (to the operator) from system motion while the operator is in the work area.

The recommended use of the interlock is with the Nordson ASYMTEK optional enclosure (D-583: P/N 7207733 D-585: P/N 7207735) and Start Button Box (P/N 7207732).

2.9.1 Interlock Recovery

When the interlock has been triggered, FmXP will display an interlock active message (Figure 2-4). To recover from an interlock shutdown, close the dispensing area front doors. When the FmXP Message 32691 appears (Figure 2-5), click **OK** to continue dispensing or **Cancel** to abort.

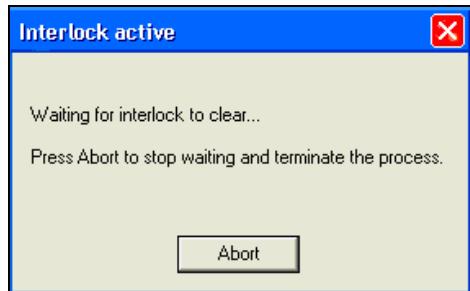


Figure 2-4 Interlock Active Message



Figure 2-5 Interlock Cleared Message

3 Operation

3.1 Overview

Before operating your D-580 Series Dispensing System, it may be helpful to familiarize yourself with the basics of how the system works. This section covers the following topics:

- Theory of Operation
- Fluidmove for Windows XP (FmXP)
- Dispensing Valve/Height Sensor/Camera Offsets
- Startup
- Positioning the Dispensing Head
- Safe Z-Height
- Adjusting the Camera
- Adjusting the Height Sensor Probe
- Adjusting Air Pressure
- Setting the Heaters
- Starting a Production Run
- System Shutdown

3.2 Theory of Operation

The D-580 Series Dispensing System consists of a positioning system and a computer. It is a three-axis (X, Y, and Z) motion system and positions a dispensing valve at a precise location over the workpiece. The dispensing head moves in the X- and Z-axes. The tooling plate moves in the Y-axis. Dispensing programs are created using Nordson ASYMTEK's Fluidmove for Windows XP (FmXP) software.

Dispensing programs include the following instructions:

- Where to dispense the fluid
- How much fluid to dispense
- When to dispense the fluid

3.3 Fluidmove for Windows XP (FmXP)

The FmXP software is used to design and run dispensing programs. The type of fluid deposit (dot, line, circle, arc, or fill), the amount of fluid, and the placement of the fluid are programmed into the system with the FmXP software. Once these parameters are set, fluid can be automatically applied in the correct amount and location every time, without operator intervention.



NOTE Refer to the *Fluidmove User Guide* or Online Help for instructions on programming and running dispensing programs.

3.4 Dispensing Valve/Height Sensor/Camera Offsets

There is an important relationship among the location of the dispensing valve tip, the height sensor probe, and the camera, relative to the work area (the total area on the tooling plate where you place your workpiece). A minimum of two offsets are used for most applications (Height Sensor-to-Dispensing Tip in both the Y- and Z-axes). There may be several other offsets depending on the options installed. When using these options, the dispensing work area is reduced by the area of the offset. For additional information, refer to [3.7 Safe Z-Height](#) and [3.9 Adjusting the Height Sensor Probe](#).

3.5 Startup

3.5.1 System Startup

If necessary, refer to the figures in [Section 1 - Introduction](#) to identify system components.

To power on the dispensing system:

1. Verify that the main power cable is connected to the main power inlet and the facility power source.
2. Verify that the facility air is at the recommended pressure level and connected to the main air pressure regulator inlet. Refer to [3.10 Adjusting Air Pressure](#).
3. Turn the main power circuit breaker to the **ON (I)** position.
4. Check the **EMO** button to see if it has been activated. If it has been activated, deactivate it by turning the red knob counterclockwise until the knob pops out.
5. Make sure the interlock signal is not interrupted. Close the dispensing system enclosure if applicable.
6. Press the **ON (I)** button on the front panel.
 - ▶ The dispensing system should be in a powered-up state and the digital gauges and green power button should be on. If not, make sure the power cable is properly connected to the dispensing system and to an active facility power source.

3.5.2 Starting Fluidmove for Windows (FmXP)

The FmXP startup procedure assumes that FmXP is already installed on your computer and that the computer is turned **ON (I)** and running Windows XP.

To start FmXP:

1. Open FmXP using one of the following methods:
 - a. In the lower left-hand corner of the computer screen, click on **Start > Programs > FmXP**.
 - b. Double-click the FmXP icon  on the Windows XP desktop.
 - ▶ When FmXP starts, it will check to see that all the Input and Output (I/O) devices for the dispensing system are communicating properly with FmXP.



CAUTION! Do not press any keys or the touchpad while FmXP is starting unless prompted to do so. If the *FmXP Message 30416 - Dispenser Motor References Not Found* appears, click **OK** to Home the dispenser (Figure 3-1).



Figure 3-1 FmXP Message 30416

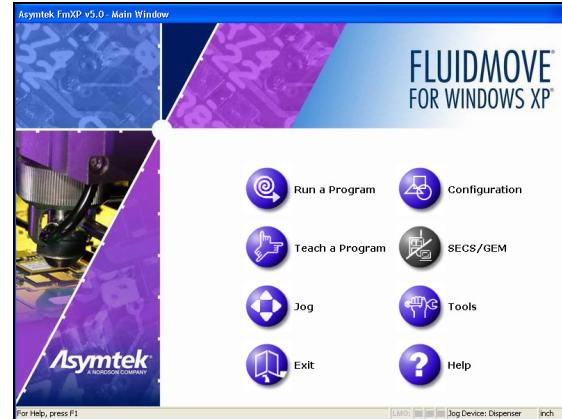


Figure 3-2 FmXP Main Window

2. The FmXP Main Window (Figure 3-2) will open.
3. Check to make sure the dispensing head is in the proper home position.



NOTE If you receive any error messages, refer to [Section 5 - Troubleshooting](#) or the *Fluidmove User Guide* or Online Help.

3.6 Positioning the Dispensing Head

When necessary, an operator can use FmXP position (jog) controls to reposition the dispensing head in the X- and Z-axes. These position controls can be operated using the touchpad to click on-screen buttons, or by pressing key combinations on the keyboard. Both methods are described.



NOTE The following procedures assume that the dispensing system and computer have been turned on and FmXP is running. Refer to [3.5 Startup](#).

3.6.1 Using the Touchpad

To operate position controls with the touchpad:

1. In the FmXP Main Window, click on **Jog**.
 - ▶ The Position Control dialog box (Figure 3-3) opens.
 - ▶ The Dispenser radio button will be selected, indicating that the dispensing head position controls are active.

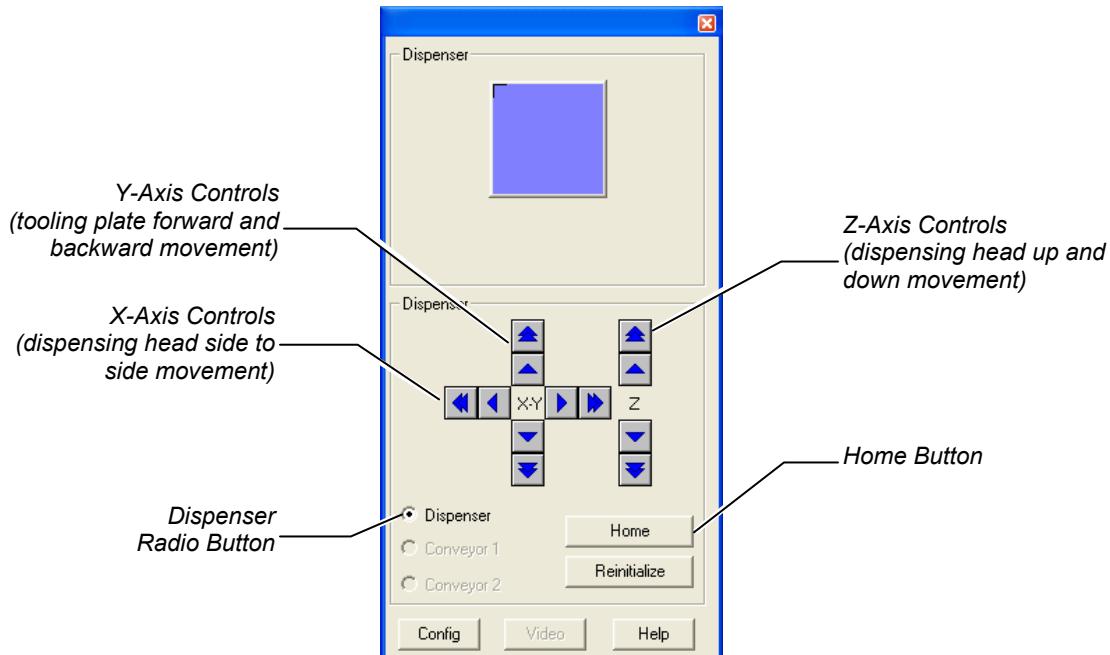


Figure 3-3 Position Control Dialog Box



NOTE The Position Control dialog box can be accessed from the FmXP Main Window, Production Window, Run Window, Programming Window, and Tools Window. For additional information on position controls, refer to the *Fluidmove User Guide* or Online Help.

To operate the dispensing head position controls:

1. On the X-Y control panel, the arrows pointing to the Left move the dispensing head to the left and the arrows pointing to the Right move it to the right.
2. On the X-Y control panel, the arrows pointing Up move the tooling plate toward the front of the dispensing area and the arrows pointing Down move it toward the back.
3. On the Z control panel, the arrows pointing Up move the dispensing head upward and the arrows pointing Down move it downward.



NOTE The single arrows and double arrows move the dispensing head or tooling plate different distances and different velocities per touchpad click (Table 3-1).

4. Clicking on **Home** sends the dispensing head and tooling plate to their home positions. The dispensing head (X- and Z-axes) home position is all the way up and to the extreme left of the dispensing area. The tooling plate (Y-axis) home position is at the extreme back of the dispensing area. In the home position, the X-, Y-, and Z-axes coordinates are (0, 0, 0).

Table 3-1 Position Controls: Jog Distance and Velocity ⁽¹⁾

Movement Axis	Distance mm (inch) ⁽²⁾		Velocity mm/sec (in/sec)	
X-Y	0.03 (0.001)	2.54 (0.100)	1.27 (0.050)	88.9 (3.500)
Z	0.03 (0.001)	1.27 (0.050)	2.54 (0.100)	10.16 (0.400)

Notes:

(1) Default distances and velocities. Refer to the *Fluidmove User Guide* or Online Help to modify jog distances and velocities.

(2) Distance per touchpad click on the arrow button.

3.6.2 Using the Keyboard

To operate position controls using keyboard commands:

1. Press [Ctrl + J] to open the Position Control dialog box.
 - The Dispenser radio button will be selected, indicating that the dispensing head position controls are active.
2. Press the appropriate key combinations shown in Table 3-2 to jog the dispensing head or tooling plate.

Table 3-2 Position Control Keyboard Commands

Speed of Movement	Command ⁽¹⁾	Dispensing Head/Tooling Plate Response
	Ctrl H	Moves the dispensing head to the Home position (front left corner of dispensing area)
Slow ⁽²⁾	Ctrl ←	Moves the dispensing head to the left
	Ctrl ↑	Moves the tooling plate toward the front
	Ctrl →	Moves the dispensing head to the right
	Ctrl ↓	Moves the tooling plate toward the back
	Ctrl Z ↓	Moves the dispensing head downward
	Ctrl Z ↑	Moves the dispensing head upward
Fast ⁽³⁾	Ctrl Shift ←	Moves the dispensing head to the left
	Ctrl Shift ↑	Moves the tooling plate toward the front
	Ctrl Shift →	Moves the dispensing head to the right
	Ctrl Shift ↓	Moves the tooling plate toward the back
	Ctrl Shift Z ↓	Moves the dispensing head downward
	Ctrl Shift Z ↑	Moves the dispensing head upward

Note: (1) Simultaneously press the keys shown.

(2) **Slow** is the same as clicking on a single arrow  in the Position Control dialog box.

(3) **Fast** has the same effect as clicking on a double arrow  in the Position Control dialog box.

3.7 Safe Z-Height

Safe Z-height is determined by choosing a height that ensures the needle, height sensor, or any part of the dispensing head does not collide with any obstacles while traveling around the dispensing area.

3.7.1 Setting Safe Z-Height

Safe Z-height is the height below which the tip of dispensing head cannot go when moving from one set of coordinates to another during operation.

To set the Safe Z-Height:

1. In the FmXP Main Window, click on **Run a Program**.
 - The Production Window opens.
2. In the Production Window, click on the **Setup** button (Figure 3-4).

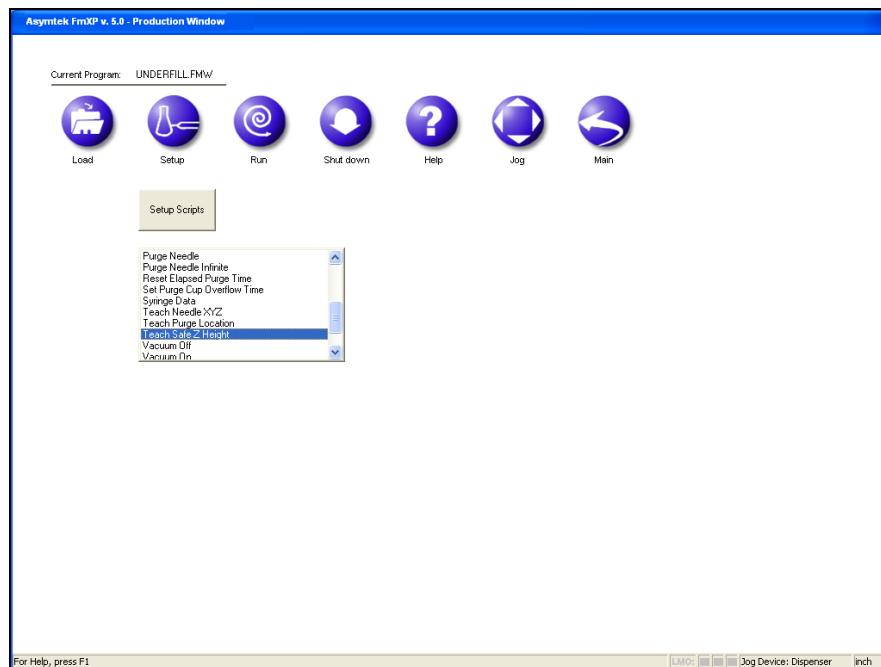


Figure 3-4 Production Window

3. Click on **Teach Safe Z-Height**.
 - The Teach Safe Z-Height Window shown in Figure 3-5 opens.

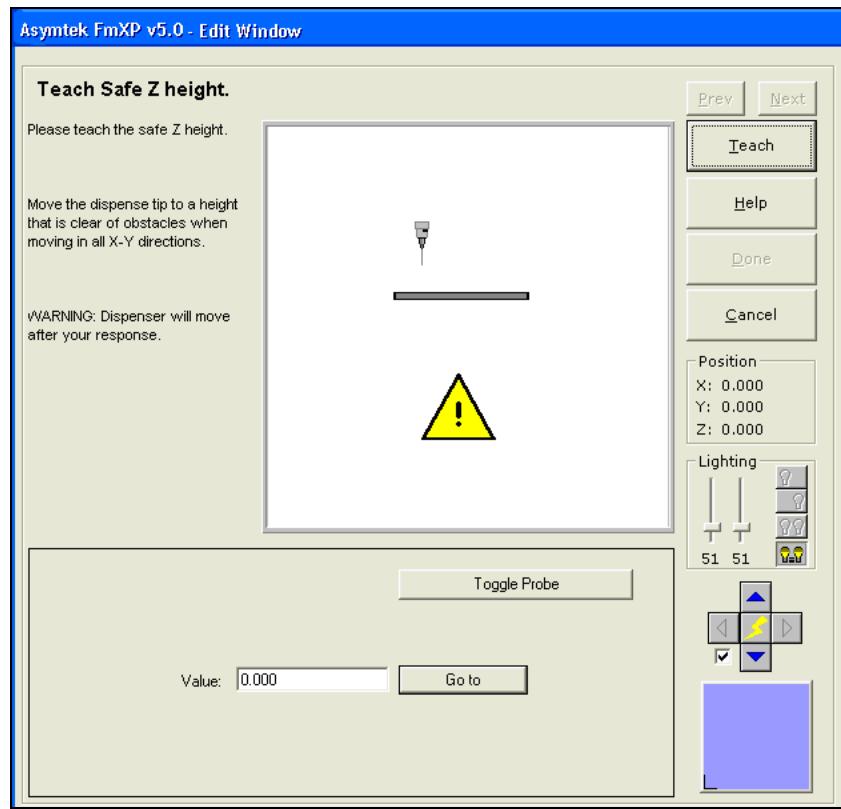


Figure 3-5 Teaching Safe Z-Height

4. Move the dispensing head over a workpiece fiducial.
5. Raise or lower the dispensing head until it reaches a safe Z-height.
6. Click on **Teach**.
 - ▶ The safe Z-height value will be recorded in the Value textbox.
7. Click on **Done**.



WARNING! Safe Z-height should never be taught lower than the tallest component on the unit to be dispensed on.

3.8 Adjusting the Camera

3.8.1 Adjusting Light Level and Color



CAUTION! Except for lighting adjustments and lens replacement, all other configuration and adjustments should only be performed by a trained service technician.



NOTE If power to the camera has been interrupted, or if the PC has been rebooted, the camera system provided will need up to two minutes to establish a new connection to the Ethernet (Figure 3-6). Attempting to open FmXP prior to establishing this connection could result in vision errors. If this occurs, close FmXP, wait until a good Ethernet connection is established (Figure 3-7), and then open FmXP.

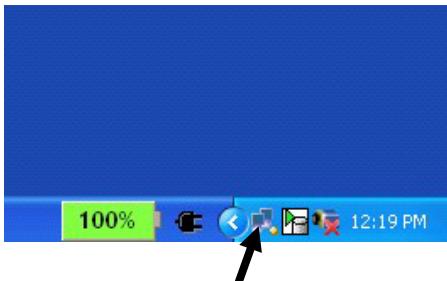


Figure 3-6 Connection being established,
Camera Offline (Do not open FmXP)



Figure 3-7 Connection established,
Camera Online (OK to open FmXP)

To adjust lighting intensity and color level:

1. Open the hood, place a workpiece on the tooling plate, and close the hood.
2. Open the Position Control dialog box using one of the following methods:
 - a. Select **Jog** from the FmXP Main Menu.
 - b. Click the **Jog** button in the Production Window.
 - c. Press **[Ctrl]+[J]** on the keyboard.
3. Click on **Video**.
 - The Video Window opens.
4. Click on **Reticles** (Figure 3-8).
 - The Video Reticles Setup Window opens.
5. In the Video Reticles Setup Window, use the position controls to move the dispensing head over the sample workpiece so that the video display reticles are aligned with a fiducial.
6. View the fiducial in the video display screen while adjusting the two lighting controls until you get the highest contrast between the fiducial and substrate or between the part being dispensed upon and the surrounding area.
 - Adjust the brightness and red/blue color balance by vertically moving the control slides on the right side of the dialog box. Clicking on the light bulb icon toggles the light control slide from a linked mode to an unlinked mode that permits up to 255 independent color level/brightness levels.



NOTE For more information concerning fiducials and video display contrast, refer to the *Fluidmove Users Guide* or Online Help.

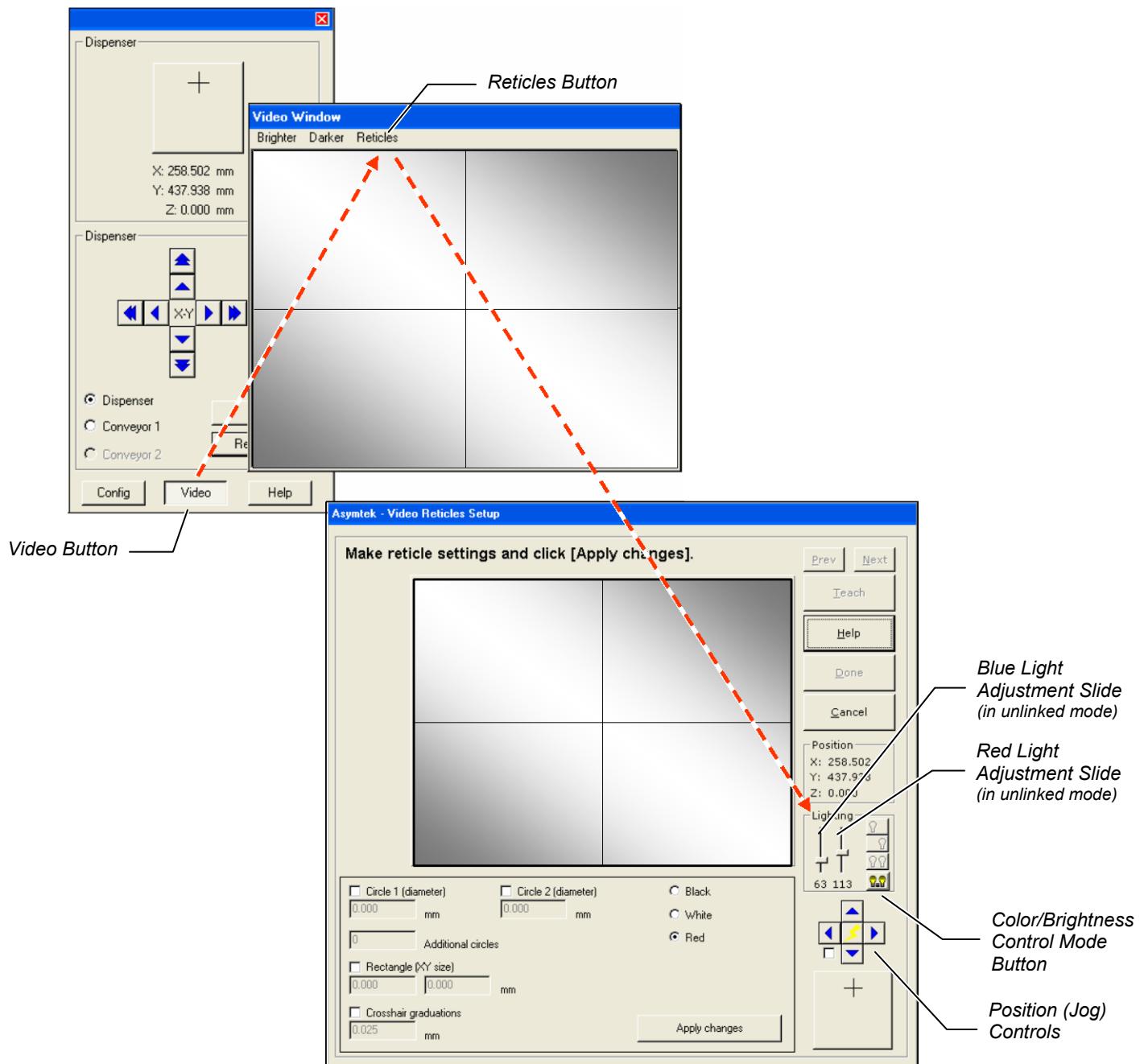


Figure 3-8 Camera Lighting Adjustment

3.8.2 Calibrating the Camera

To calibrate the camera:

1. Place a workpiece on the tooling plate and turn on the vacuum switch.
2. In the FmXP Main Window, click on **Configuration > Setup Vision**.
 - The Setup Vision Window opens.
3. Click on **Calibrate**.
 - The Calibration Window opens.
4. Position the camera over a fiducial and adjust the light level to obtain a good image contrast.
 - If the image is not in focus, focus the camera as described below.
5. Click on **Next**.
6. Verify that the fiducial image is centered and click on **Next**.
 - The vision system will take a snap image of the fiducial.
7. If the fiducial is acceptable, select **Next**. If not, select **Prev** and define a new fiducial.



NOTE The fiducial should fit inside the green square on the camera image.

8. After the camera calibration sequence is complete, verify that the X and Y values are relatively close to each other. If there is a large difference, repeat the calibration process and define a new fiducial.
9. If the results are satisfactory, select **Done** to save the calibration results.



NOTE Machine offsets must be performed after calibrating the camera. For more information, refer to the *Fluidmove User Guide* or Online Help.

3.8.3 Focusing the Camera



NOTE This procedure assumes that the dispensing system has been powered on and FmXP is running.

3.8.3.1 Fixed Height Pattern Recognition System:

To adjust the camera fixed height:

1. Hold the camera and use a 4 mm hex key to loosen the three side screws (upper, middle, and lower) on the bracket (Figure 3-9).
2. Position the camera over a fiducial.
3. Slowly move the camera bracket up and down.
4. When a sharp image is obtained, lock the upper screw.
5. Fine tune the camera focus using the fine adjustment screw located at the top of the camera bracket.
6. Tighten the middle and lower screws on the camera bracket.

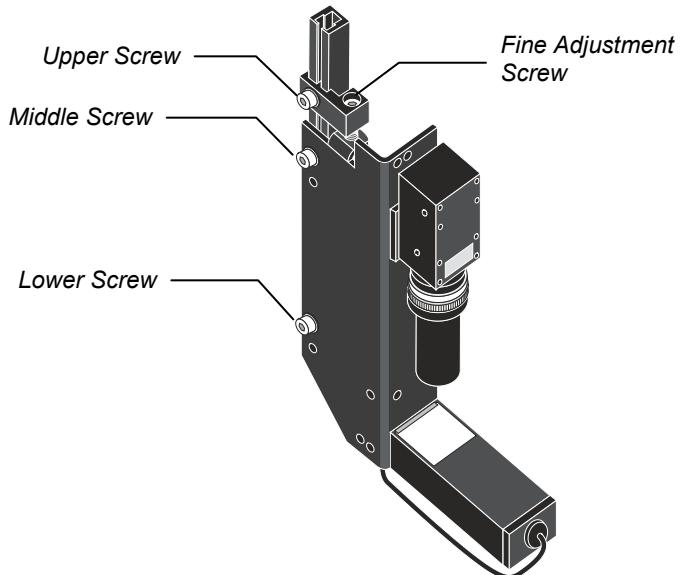


Figure 3-9 Focusing the Camera

3.8.3.2 Variable Height Pattern Recognition System:

In FmXP, use the position controls to focus an element to the proper height. Refer to the *Fluidmove User Guide* or Online Help for additional information.



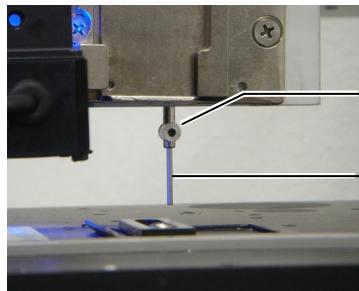
NOTE A machine offsets routine must be performed after focusing the camera. For more information, refer to the *Fluidmove User Guide* or Online Help.

3.9 Adjusting the Height Sensor Probe

The height sensor probe must be adjusted each time a different type of dispensing valve or a different length of needle is installed.

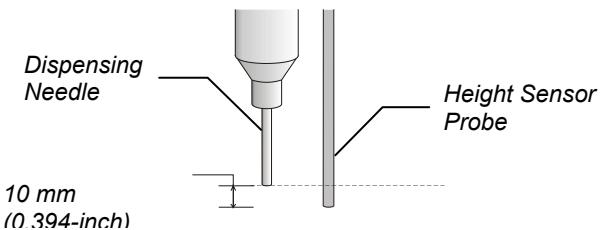
To adjust the height sensor probe:

1. Ensure that there is air pressure to the system.
2. Within FmXP, click on Tools, I/O Test, (Dispenser Icon) and select the tab for Outputs 0-31. Click on the button that says "HS_PROBE_EXTEND" (this will extend the height sensor probe).
3. The probe and a small setscrew will now be visible from the front of the Z-head.
4. Using a 1.5 mm hex key, loosen the height sensor probe locking screw at the back of the Z-axis plate (Figure 3-10).
5. Move the probe to the desired location (approximately 10 mm below the needle tip in the extended position).
6. Tighten the height sensor locking screw. Do not overtighten.
7. Click again on the "HS_PROBE_EXTEND" button to retract the probe.



DispenseMate Rear View

Height Sensor Probe
Locking Screw
Height Sensor Probe



Probe-to-Needle Alignment

Figure 3-10 Adjusting the Height Sensor Probe



NOTE

For additional information on Dispensing Valve to Height Sensor Offsets, refer to [3.4 Dispensing Valve/Height Sensor/Camera Offsets](#). Refer to the *Fluidmove User Guide* for step-by-step instructions on performing a user-prompted setup routine to ensure proper offset parameters for the camera, needle, and height sensor.

3.10 Adjusting Air Pressure

3.10.1 Adjusting the Main Air Pressure

To adjust the main air pressure:

1. Verify that the facility air is connected to the main air pressure regulator inlet (Figure 3-10).
 **TIP** For accurate pressure adjustment, lower the pressure below the desired level and then increase to the desired pressure.
2. Rotate the knob on the main air pressure regulator counterclockwise until the main air pressure gauge registers 0 psi.
3. Rotate the knob clockwise until the main air pressure gauge registers the air pressure value (psi or kPa) required by the dispensing application.
 - ▶ If the gauge fails to register pressure, verify that the dispensing system is connected to the facility air source.
4. Monitor the main air pressure gauge to make sure that pressure builds at a steady rate. Watch for dropping pressure indicating an air leak.
 - ▶ If there is an air leak, identify the source, shut off the facility air, and repair the leak before proceeding.

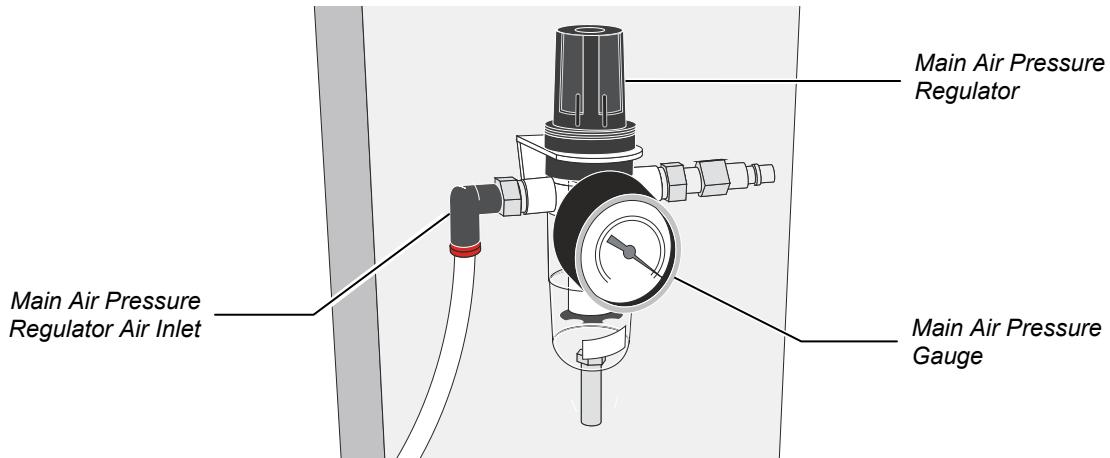


Figure 3-11 Main Air Pressure Regulator and Gauge

3.10.2 Adjusting the Valve and Fluid Pressure

To adjust the valve and fluid pressure:

1. Locate the fluid and valve air pressure regulator adjustment knobs on the front control panel (Figure 3-12).



TIP For accurate pressure adjustment, lower the pressure below the desired level and then increase to the desired pressure.

2. Rotate the adjustment knob counterclockwise until the gauge registers 0 psi.
3. Rotate the knob clockwise until the associated gauge registers the air pressure value (psi or kPa) required by the dispensing application.



NOTE Valve and fluid pressure settings depend on the fluid being dispensed and dispensing valve being used. Refer to the manual applicable to the dispensing valve on the system.

4. Monitor the valve air pressure gauge to make sure that pressure builds at a steady rate. A drop in air pressure can indicate an air leak.
 - If there is an air leak, identify the source, shut off the facility air, and repair the leak before proceeding.

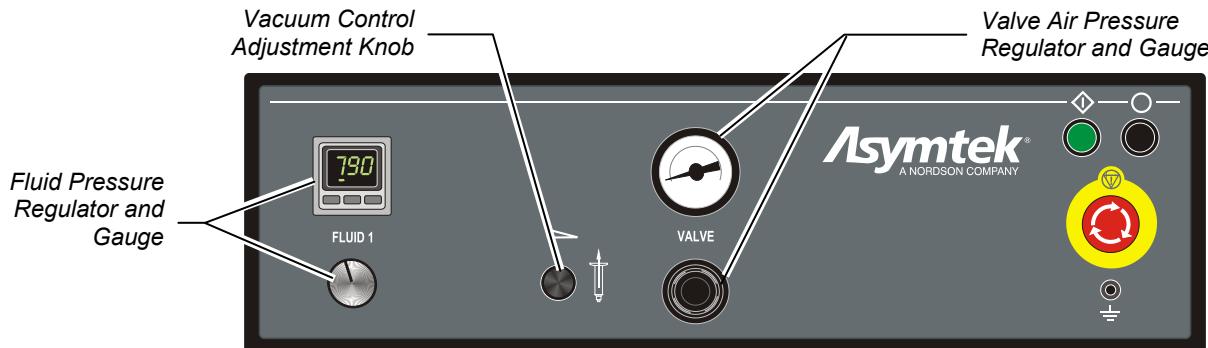


Figure 3-12 Front Control Panel

3.10.3 Adjusting the Vacuum Control

The vacuum control allows low viscosity fluids to be consistently dispensed without dripping between cycles. The vacuum exerts a negative pressure (suckback) on the fluid, thereby decreasing dripping.

To adjust the vacuum control:

1. Turn the vacuum control adjustment knob counterclockwise to increase vacuum pressure and decrease dripping.
2. Turn the knob clockwise to decrease vacuum pressure.

3.10.4 Setting the Low Pressure Detection Threshold

This feature allows the user to set the air pressure level at which the software will issue an on-screen low air pressure error message.

To set the low pressure threshold:

1. In the FmXP Main Window, select **Configuration > Setup Runtime Preferences > Calibrate Low Air Pressure Detect.**
 - The Low Air Pressure Detection Configuration Window (Figure 3-13) opens.
2. Adjust the dispensing system's main air pressure regulator to the pressure at which you want the software to issue a low pressure error message.
 - This should be a value that would result in dispensing variations. The typical set value is 65 psi, but this may vary depending upon the sensitivity of the application.
3. In the Low Air Pressure Detection Configuration dialog box, click the **Set** button to set the current main air pressure regulator reading as the low air pressure threshold value.
4. Click on **OK**.
5. Restore the air pressure to the normal setting.

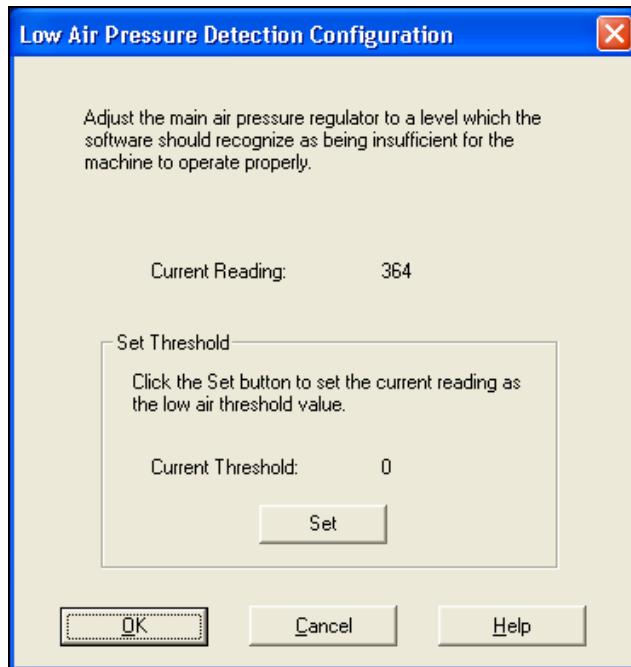


Figure 3-13 Low Air Pressure Detection Configuration Window

3.11 Setting the Heaters

The only available Heater in the dispensing system is the needle heater. Heater temperature is set in the FmXP software. The heater controller monitors the Resistance Temperature Detector (RTD), compares it to the heat parameters set in Fluidmove, and regulates the voltage going to the heating element to maintain the set temperature.

3.11.1 Needle Heater



CAUTION! The operator can turn the heaters ON and OFF and monitor their function. However, only authorized personnel should set heater parameters.



NOTE Contact your applications engineer or Nordson ASYMTEK Technical Support for information about setting heater parameters for your particular application.

To setup the needle heater in Fluidmove:

1. In the Fluidmove Main Window, click on **Run a Program**
2. In the Production Window (Figure 3-14), click on **Setup** and in the list box select **Setup Heater 1**.

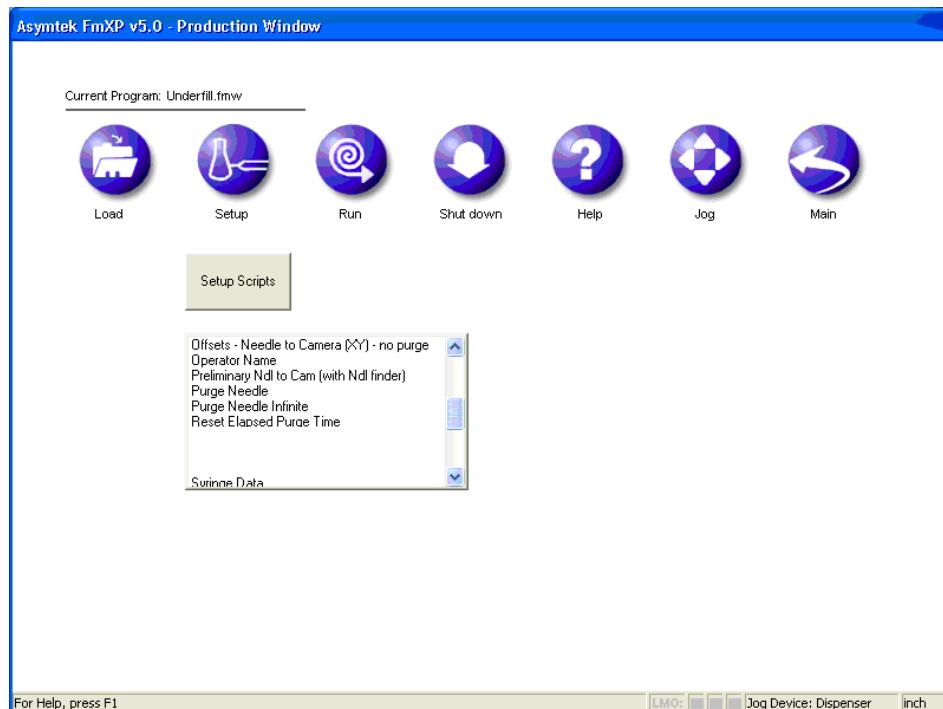


Figure 3-14 Fluidmove Production Window

- The Heater Control Window (Figure 3-15) opens.
- 3. In the Heater Control Window, locate the channel (loop) for the desired heater.

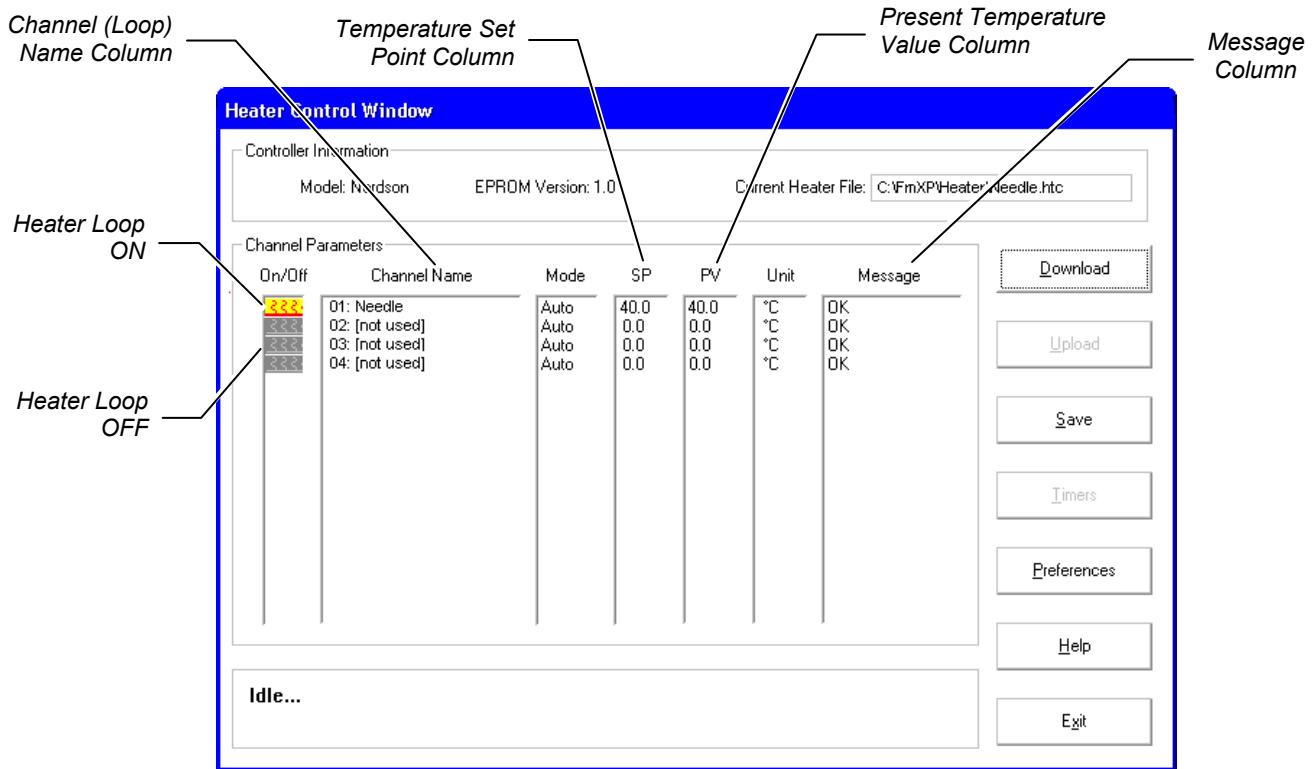


Figure 3-15 Heater Control Window

4. Activate the heater by double clicking the icon in the On/Off column until the heater loop icon turns yellow and red.



NOTE To change heater temperature, double click on the heater loop name. The Heater Parameters dialog box will open.

- The heater is operating properly if both of the following are observed:
 - The Message column contains any message except "T/C Break".
 - The present value (PV) column indicates the heater is heating up to, and stabilizing at, the temperature set point (SP).

5. If the heater is operating properly, click on **Exit** to close the Heater Control Window. If it is not operating properly, refer to [Section 1 - Introduction](#) or call a service technician.

3.12 Starting a Production Run

To start a production run:

1. Verify that the main air, valve, and fluid pressures are set to the desired levels.
 - If not, adjust pressure as described in [3.10 Adjusting Air Pressure](#).
2. In the FmXP Main Window, click on **Run a Program**.
 - The Production Window opens.
3. In the Production Window, click on the **Setup** button and then click on **Setup Scripts** and then on **Prompted Setup** (Figure 3-16).

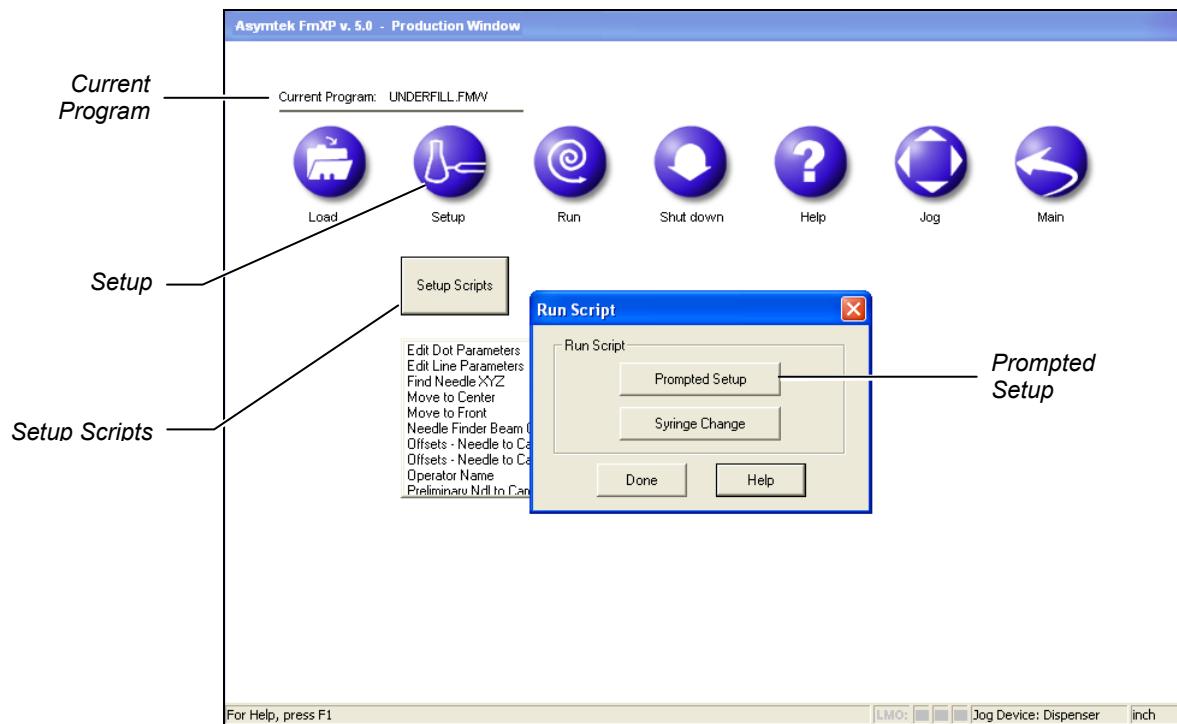


Figure 3-16 Production Window – Setup Scripts

4. Follow the on-screen prompts and when finished, click on **Exit** to return to the Production Window.
 - If necessary, refer to the *Fluidmove User Guide* or Online Help for assistance.



NOTE If the current program shown in the upper left corner of the Production Window is not the desired program, proceed with Step 5. Otherwise, skip to Step 7.

5. In the Production Window, click on the **Load** button (Figure 3-17).
 - The Open dialog box will appear.
6. In the Open dialog box, select the program you wish to run and click on **Open**.
 - The current program name will appear in the Production Window.

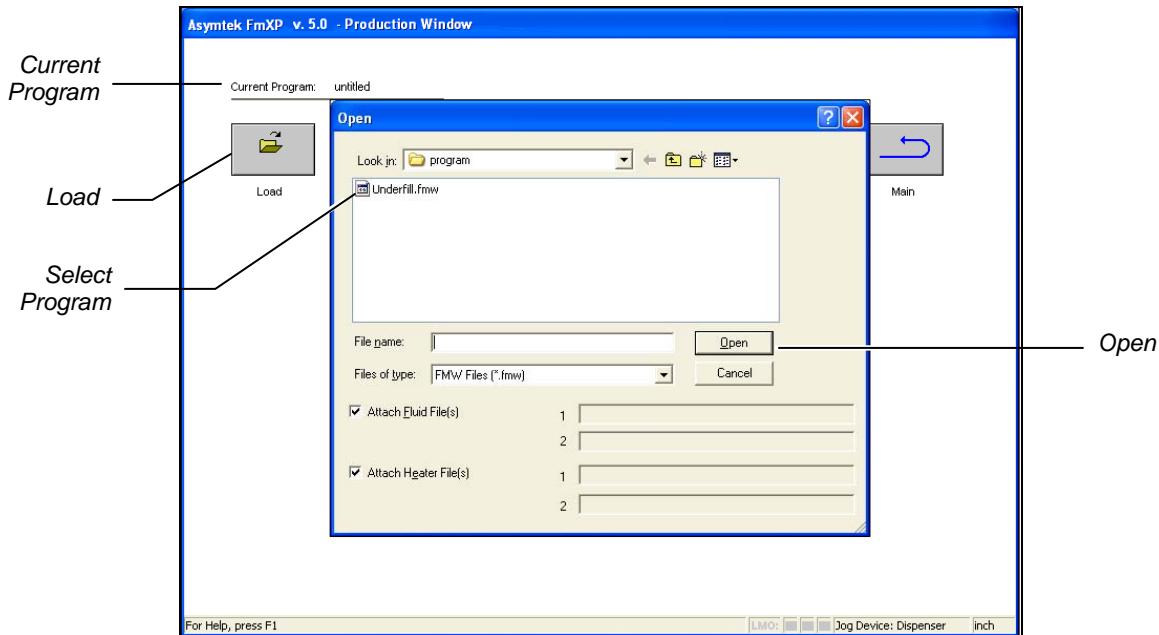


Figure 3-17 Production Window – Load Program

7. In the Production Window, click on **Run** and then click on the **Run Production** button (Figure 3-18).
 - The Run Window opens.
8. Load the workpiece.
9. If applicable, switch the heated vacuum tooling switch to the **ON (I)** position. Refer to Figure 1-4 for the location of the switch.
10. Click on **Go** to start the dispensing process (Figure 3-18).

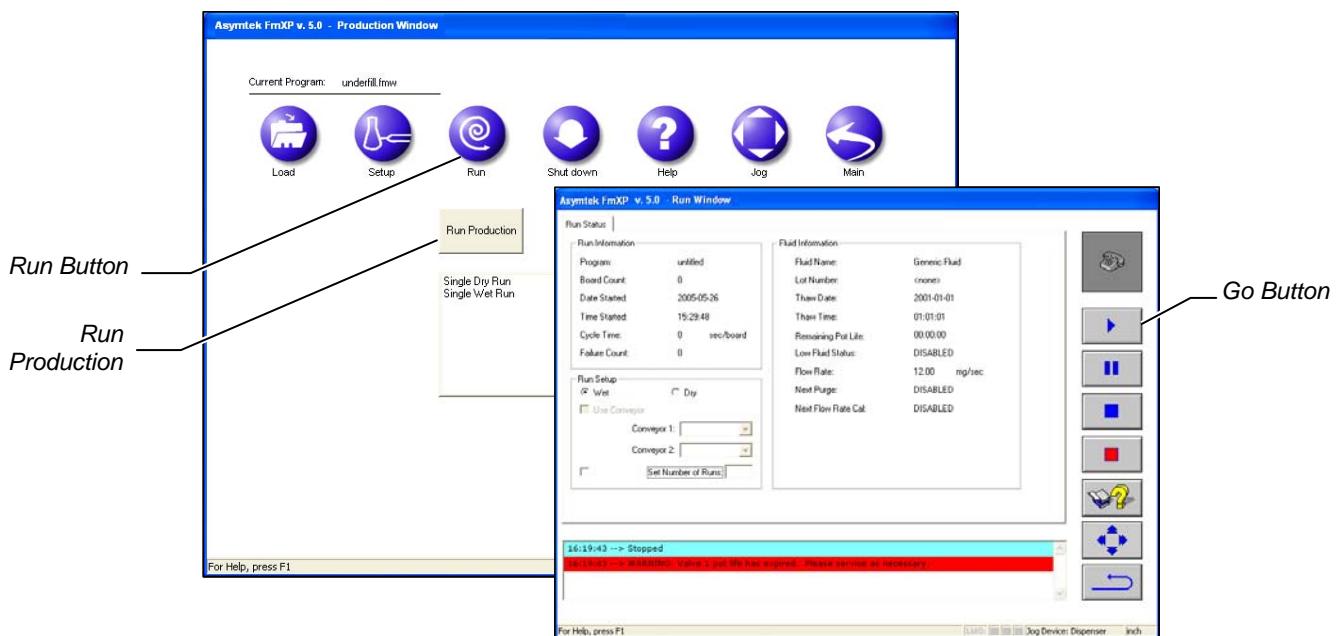


Figure 3-18 Production Window – Run Program



NOTE Refer to the *Fluidmove User Guide* for programming instructions.

3.13 System Shutdown

Routine shutdown may vary depending on your particular requirements. However, it is recommended that you incorporate the following procedures into your production shutdown routine.

3.13.1 Production Shutdown

To shut down at the end of a production shift:

1. Wait for the dispensing program to complete and verify that all motion has stopped.
2. Unload all workpieces.
3. If necessary, purge or remove and clean the dispensing valve as instructed in the applicable valve manual.
4. Exit FmXP.
5. Exit Windows XP and turn off the computer.
 - ▶ Make sure Windows XP completely shuts down before turning off the computer.
6. Turn the main power circuit breaker on the back of the system to the **OFF (0)** position.



WARNING!



CAUTION!

Before performing any servicing or parts replacement, the system must be shut down for service. Failure to do so could cause serious injury to the user and/or serious damage to the dispensing system.

3.13.2 Service Shutdown

To shut down for service:

1. Perform a production shutdown. See [3.13.1 Production Shutdown](#).
2. Disconnect the main power cable and place it in a locked box.
3. Disconnect the facility air hose and place a warning tag on the main air inlet.

4 Maintenance

4.1 Overview

Following a routine maintenance schedule and maintenance procedures can prevent part degradation and ensure high quality performance for every production run. Table 4-1 lists recommended maintenance procedures and intervals that will help to ensure quality dispensing and optimize system performance. Basic maintenance procedures are described later in this section.



WARNING! Before performing any of the maintenance procedures in this section, shut down the dispensing system as described in [3.13 System Shutdown](#). Maintenance procedures should be performed only by a trained service technician.

4.2 Recordkeeping

The type of procedure performed should be recorded in maintenance records for the dispensing system. Dates, part numbers/serial numbers of replaced parts, names of technicians, and other pertinent data should be recorded. This information can be used to coordinate PM activities with scheduled downtime.

4.3 Routine Maintenance Procedures

Table 4-1 Routine Maintenance Procedures

Task	Frequency	Instructions
Clean Dispensing Area	Daily	Remove spilled fluids with the manufacturer's recommended solvent and a soft cloth. Remove any foreign objects from dispensing area and tooling plate.
Replace Purge Station Cup	Daily	Refer to 4.4.1 Replacing Purge Station Cup .
Clean Purge Station Boot	Daily	<ol style="list-style-type: none">1. Remove the purge station cover.2. Carefully clean the boot and purge station cover with a small brush or soft cloth and the cleaning agent recommended by the fluid manufacturer. Inspect the rubber boot for damage. Replace if needed. Refer to 4.4.2 Replacing the Purge Boot.3. Reinstall purge station cover.
Clean Dispensing System	Weekly	Clean all surfaces using a clean cloth and isopropyl alcohol.
Drain Water Trap	Weekly	Check water level and empty if necessary. Refer to 4.5 Draining the Water Trap .
Check Air Cylinders	Monthly	Check for leakage.
Lubricate Mechanical Drive Cables	Every 3 mos.	Refer to 4.7.1 Lubricating the X-, Y-, and Z-Axis Cables .
Lubricate X- , Y- , and Z-axes Linear Guides	Every 3 mos.	Refer to 4.7.2 Lubricating the X-, Y-, and Z-Axis Linear Guides .
Clean Camera Lens	Every 3 mos.	Use the cleaning kit provided.
Tension Mechanical Drive Cables	Every 6-12 mos.	Refer to 4.8 Tensioning the Cables .

4.4 Basic Maintenance Procedures - Replacing Consumables

Consumables are items that are discarded and replaced on a regular basis. The following items are common consumables and should be replaced at the intervals recommended in Table 4-1.

- Purge Cup
- Purge Boot

Tools and Materials Needed

- Needle-nosed Pliers
- Isopropyl Alcohol
- Clean Shop Cloth
- Rubber Gloves
- Replacement Purge Boot (Table 4-2)
- Replacement 1 oz. (29 ml) Plastic Cups (P/N 58-0030)
- Small Brush
- Personal Protective Equipment (as required)

Table 4-2 Purge Boot Colors, Sizes, and Compatible Needles

Purge Boot Color	Inside Diameter	Compatible Needle Gages	Asymtek P/N
Orange	0.5 mm (0.020-inch)	26, 27, 30, 32	01-0019-00
Pink	0.8 mm (0.031-inch)	22, 23, 24, 25	01-0021-00
Green	1.1 mm (0.045-inch)	19, 20, 21	01-0018-00
Olive*	3.0 mm (0.120-inch)	14, 15, 16, 18	01-0022-00

*Recommended size for nozzles on DJ-2000 and DJ-9000 Series Dispensing Valves.

4.4.1 Replacing Purge Station Cup

The cup in the purge station should be replaced at the intervals recommended in Table 4-1.

To replace the purge station cup:



WARNING! Follow all local regulations, the material manufacturer's MSDS, and facility practices concerning personal protective equipment and disposal of hazardous materials.



NOTE The Fluidmove valve offsets routine does not need to be performed after replacing the purge station cup.

1. Remove the cover on the purge station (Figure 4-1).
2. Remove and discard the plastic cup inside the purge station and inspect the interior surfaces for spilled fluid.
 - If the interior of the purge station has spilled fluid, clean with the recommended cleaning agent and a soft cloth.
3. Place a new plastic cup inside of the purge station.
4. Clean the cover using isopropyl alcohol and a soft cloth.
5. Reinstall the cover and close the hood.



NOTE Refer to [Table B-1](#) in [Appendix B](#) for purge cup replacement part number.

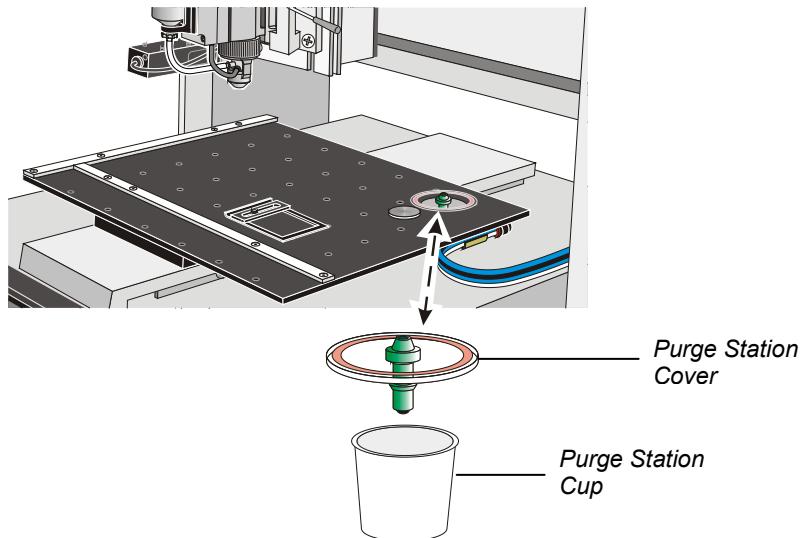


Figure 4-1 Replacing the Purge Station Cup

4.4.2 Replacing the Purge Boot

To replace the purge boot:



WARNING! Follow all manufacturer MSDS, facility requirements, and local ordinances concerning personal protective equipment and disposal of hazardous materials.

1. When the dispensing system is idle, open the hood.
2. Remove the purge station cover (Figure 4-2).
3. Using needle-nosed pliers grip the top of the purge boot and pull it out from the top of the cover. Discard the used purge boot.
4. If the cover is dirty, clean it with the recommended cleaning agent and a soft cloth.
5. Obtain a new boot. Refer to Table 4-2 for compatibility information.
6. Insert the new boot, narrow end first, into the top of the cover.
7. Push the boot downward through the hole in the cover until it starts to emerge from the bottom.
8. Using fingers or needle-nosed pliers grip the bottom of the boot and pull gently through the hole until it is fully seated. Slight scoring on the bottom end of the boot is acceptable, but the top of the boot must be undamaged.
9. Reinstall the cover onto the purge station.
10. Close the hood.

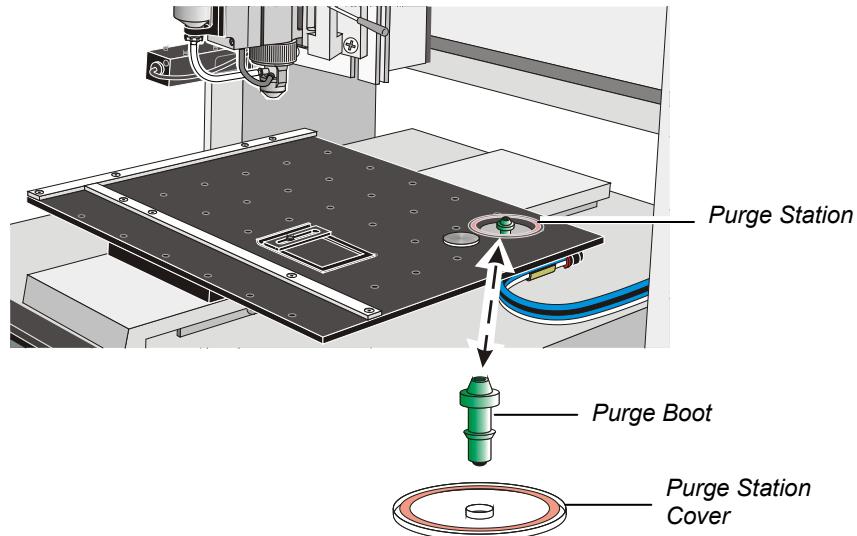


Figure 4-2 Replacing the Purge Boot

4.5 Draining the Water Trap

Because the facility air supply may contain moisture that can damage the dispensing system, the DispenseMate is equipped with a water trap that condenses this moisture before it enters the pneumatic system. The operator or technician must drain the water trap weekly or whenever it is full.

Tools and Materials Needed:

- Container for wastewater

To drain the water trap:

1. Locate the water trap at the rear of the system.
2. Shut off facility air pressure and disconnect the facility air supply from the main air pressure regulator inlet (Figure 4-3).
3. Hold a container under the water trap to catch the water and open the water drain knob by turning it counterclockwise.
4. After the trap has been drained, close the water drain knob by turning clockwise.
5. Reconnect the facility air supply to the main air pressure regulator inlet.

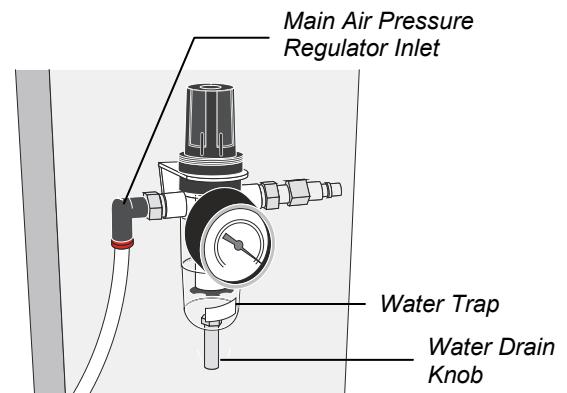


Figure 4-3 Draining the Water Trap

4.6 Removing the Axis Covers

In order to perform the remainder of the maintenance procedures described in this section, it is necessary to remove the axis covers (Figure 4-4).

To remove the axis covers:

1. Perform a system shutdown as described in [3.13 System Shutdown](#).
2. To remove the X-axis cover, loosen the two set screws and slide to the side.
 - DO NOT remove the spring pins.
3. To remove the Y-axis Cover, remove the two screws at the back and pull it forward.

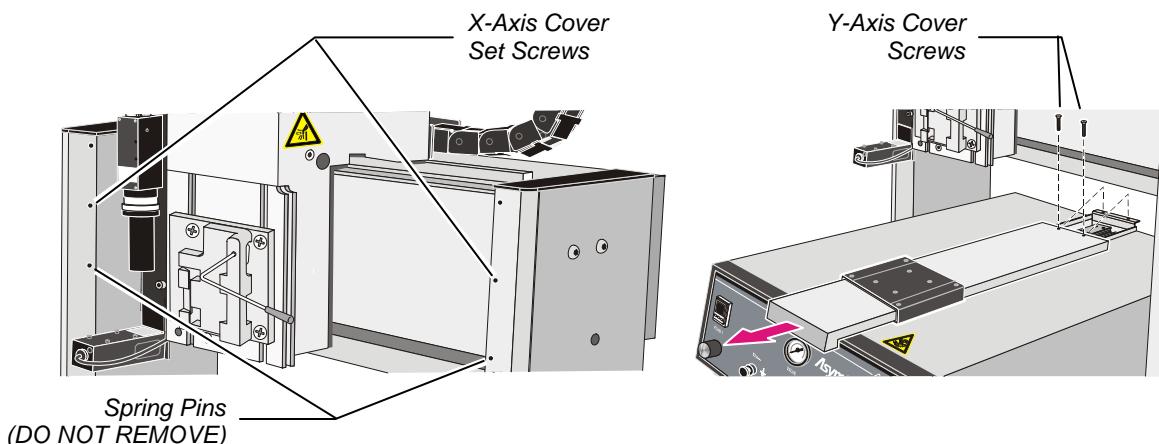


Figure 4-4 Removing the Axis Covers

4.7 Lubricating the Cables and Linear Guides

The X-, Y-, and Z-axes support the dispensing head and allow it to travel within the dispensing area. To ensure smooth dispensing head movement the rails and linear guides must be lubricated approximately every three months. The location of the Mechanical Drive Cables is shown in Figure 4-5.

4.7.1 Lubricating the X-, Y-, and Z-Axis Cables

To lubricate the cables:

1. Remove the X- and Y-axes covers as described above.
2. Move each axis to its home position (X-axis far left, Y-axis rear, Z-axis upward).
3. Using a new lint-free cloth, wipe all cables to remove old grease or contamination.
4. Move each axis to its opposite end of travel and continue to wipe the cables clean.
5. Apply a light film of cable grease to all cables.
6. Move each axis back and forth over its entire length of travel four times to distribute the grease.
7. Wipe off any excess grease.
8. When finished, replace the axis covers and tighten the screws.



NOTE When replacing the X-axis cover, make sure to place it on the spring pins.

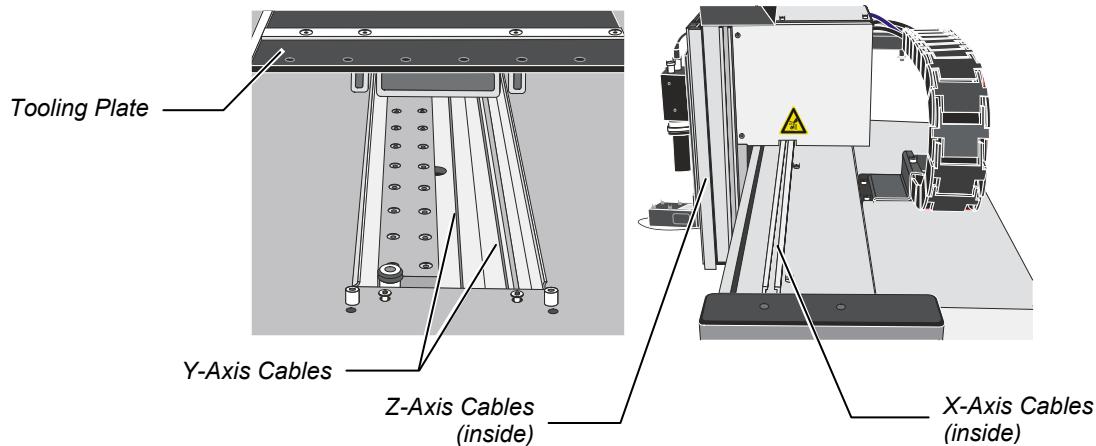


Figure 4-5 Mechanical Drive Cables

4.7.2 Lubricating the X-, Y-, and Z-Axis Linear Guides



NOTE To perform the following procedure, you will need Nordson ASYMTEK Grease Kit P/N 7203262. The kit contains a grease syringe.

To lubricate the linear guides:

1. Remove the X- and Y-axis covers as described previously in this section.
2. Load the grease cartridge into the grease syringe.
3. Purge the air from the grease syringe by dispensing grease until a solid stream flows from the syringe.
4. Using the position controls, move the dispensing head to the front of the dispensing area and lower it as much as possible.
 - The needle and height sensor probe should not touch the substrate.
5. Turn **OFF (0)** the main power circuit breaker.
6. Locate the X-axis bearing housing (Figure 4-6).
7. Locate the dust caps at the front/rear of each bearing housing. Using a small screwdriver, carefully remove the caps, exposing the grease port.
8. Insert the tip of the syringe into the grease port and pump the syringe once or twice to inject an ample amount of grease into the housing.
 - The housing is full when grease comes out of the ends.
9. Spread the excess grease along the length of the X-axis linear guides.
10. Repeat Steps 6 to 9 for the Y- and Z-axis linear guides.
11. When finished, replace the axis covers and tighten the screws.

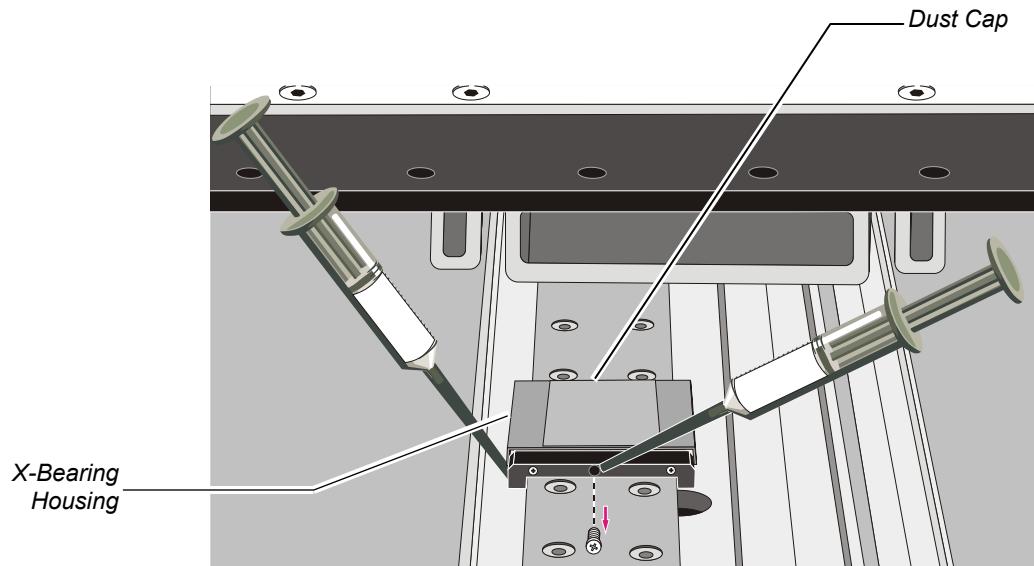


Figure 4-6 Lubricating the X-, Y-, and Z-Axis Linear Guides

4.8 Tensioning the Cables

To tension the cables:

1. Remove the X- and Y-axis covers as described previously in this section.
2. Tension the X-axis cables as follows:
 - a. Loosen the two X-axis tensioner block screws (Figure 4-7).

! WARNING! When performing this procedure, loosen the tensioner block screws, **DO NOT REMOVE THEM**. Removing these screws will cause the springs to pop. The system will then need to be returned to the factory for repair.

- b. Manually move the dispensing head to the left and then to the right the full length of the axis. Repeat three to five times.
- c. Center the dispensing head along the X-axis and tighten the tensioner block screws.

3. Tension the Y-axis cables as follows:
 - a. Remove the tooling plate.
 - b. Loosen the two Y-axis tensioner block screws (Figure 4-7).
 - c. Manually move the tooling plate to the back and then to the front the full length of the axis. Repeat three to five times.
 - d. Center the tooling plate and tighten the tensioner block screws.
4. Tension the Z-axis cables as follows:
 - a. Manually push the dispensing head down.
 - b. Loosen the two Z-axis tensioner block screws (Figure 4-7).
 - c. Manually move the dispensing head up and down the full length of the axis. Repeat three to five times.
 - d. Tighten the tensioner block screws.
5. When finished, replace the axis covers, tighten the screws and re-attach the tooling plate.

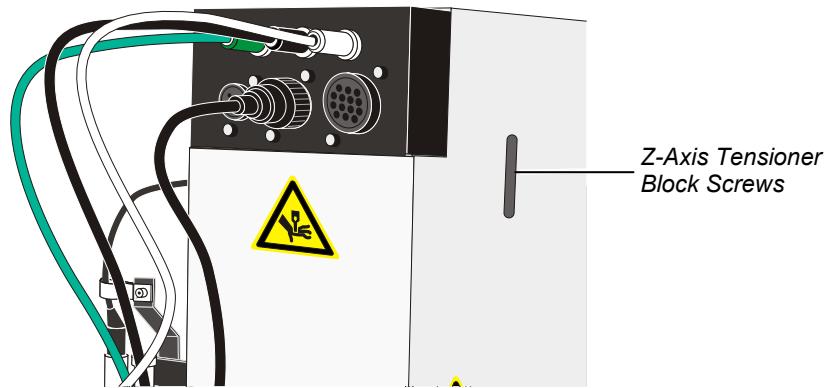
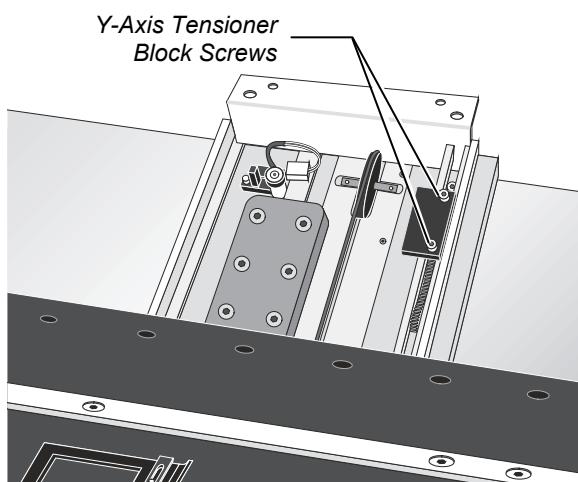
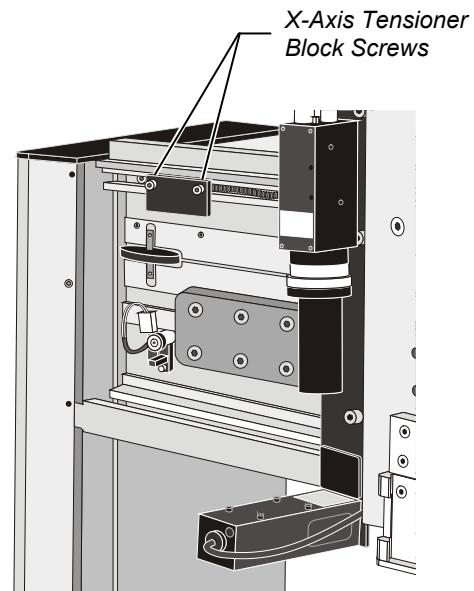


Figure 4-7 Tensioning the Cables

5 Troubleshooting

5.1 Overview

If you have difficulty operating your dispensing system, use this section to identify a possible solution to the problem. If you have difficulties not listed in this section, or the suggested solution does not correct the problem, contact Nordson ASYMTEK Technical Support. This section covers the following basic system troubleshooting procedures:

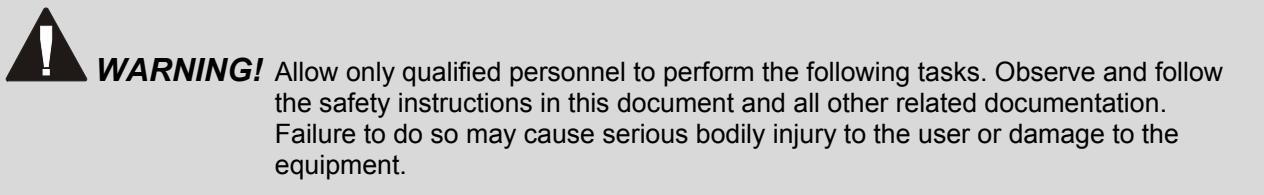
- System Power
- Height Sensor
- Pneumatic
- Vision System
- Dispensing Head



NOTE The troubleshooting procedures in this section are operator level procedures. Refer to the *Fluidmove User Guide* or Online Help for assistance with FmXP.

5.2 Safety First

It is essential that you follow all safety warnings and consider all safety warning labels when performing the troubleshooting procedures. Refer to [Section 2 - Safety](#) for specific information.



5.3 Recordkeeping

The type of procedure performed should be recorded in maintenance records for the dispensing system. Dates, part numbers/serial numbers of replaced parts, names of technicians, and other pertinent data should be recorded.

5.4 Basic System Troubleshooting

5.4.1 System Power

Table 5-1 System Power Troubleshooting

Symptom	Possible Cause	Recovery Procedures
No Power to Major System Components	The Start (I) button has not been pressed	Press the Start (I) button on the control panel.
	Main power cable is disconnected	Check that the main power cable is connected to an AC source.
	Main power circuit breaker is OFF	Turn ON (I) the main power circuit breaker at the rear of the system.
	EMO button has been activated	<ol style="list-style-type: none"> 1. Turn the EMO button counterclockwise until it pops out. 2. Press Start (I) on the control panel.
	Blown fuse in electrical system	Contact a service technician.
	Interlock circuit is interrupted	Make sure the interlock connector (P/N 199280) is installed.

5.4.2 Pneumatic

Table 5-2 Pneumatic Troubleshooting

Symptom	Possible Cause	Recovery
No Air Pressure	System is not connected to facility air supply	Check the main air inlet at the rear of the system.
	Main air regulator is OFF	Verify main air regulator is set properly.
	FmXP not started	FmXP must be running to initialize the machine pneumatics.
No Fluid Pressure	Air Pressure	Make sure the fluid pressure regulator is set to the proper air pressure.
	FmXP not started	Start FmXP.
No Valve Pressure	Main air switch OFF	Make sure main air switch is ON.
	Air Pressure	Make sure valve pressure regulator is set to the proper air pressure.
	Syringe disconnected	Connect the syringe receiver head to the Valve Off (black hose) port on the dispensing head.
	FmXP not started	Start FmXP.
Leaky Regulator	Damaged regulator	The regulator will need to be replaced. Contact Nordson ASYMTEK Technical Support.
Air Hissing at Rear of System	Air leak in the dispensing system pneumatic line	Check for source of leak and seal leak or replace leaking component.
	Leak in facility air supply hose	Repair or replace hose.
	Facility air pressure is too high	Adjust facility air pressure.
	Vacuum control is turned on	Normal operation.

5.4.3 Dispensing Head

Table 5-3 Dispensing Head Troubleshooting

Symptom	Possible Cause	Recovery
No X-, Y-, or Z-Axis dispensing head motion	No system power	Refer to Table 5-1 - System Power Troubleshooting .
	Servo amps failed	Contact a service technician.
	+48V power supply down	
	Limits not cleared	
	Home/Limit cable disconnected	Connect cable.
Dispense Head fails to find Home	Home PCA damaged	Replace PCA.
	Home flag not positioned properly	Contact a service technician.
	Obstruction preventing machine motion	Remove obstruction.
Dispense Head starts to move, stops, and goes open loop	Fatal following error	Contact a service technician.
	Cable pulley loose	
	Amp inhibit (voltage, current, hall, temp)	
Jerky movement	Mechanical interference along X-, Y-, or Z-axis	Visually inspect the axis for anything that may be restricting movement.
Dispenses at wrong Z-axis position	Height Sensor has been adjusted or is loose	Perform a Valve Offsets or Calculate Master Offsets routine in FmXP. For assistance, refer to the <i>Fluidmove User Guide</i> or Online Help.
	Nozzle/needle has been changed	

5.4.4 Height Sensor

Table 5-4 Height Sensor Troubleshooting

Symptom	Possible Cause	Recovery
Probe does not drop or retract	Probe damaged	Check for bent probe.
	No air pressure	Verify main air pressure is ON.
Needle hits substrate	Probe tip is lower than the needle tip when valve is in dispensing position	Perform Valve Offsets or Calculate Master Offsets in FmXP.

5.4.5 Vision System

Table 5-5 Vision System Troubleshooting

Symptom	Possible Cause	Recovery
No Image (FmXP display window is a solid pink color) or FmXP shows vision error	Camera is not connected	Verify camera cable is securely connected to the connector on top of the camera.
	Camera cable damaged	Replace cable.
	Camera has not initialized	Close FmXP. Restart FmXP after camera has initialized. See 3.8 Adjusting the Camera .
No Image (FmXP display window is dark or black)	Lighting intensity is too low	Increase light level in FmXP.
	Lighting module is disconnected	Restore lighting module connection.
	Lens is blocked by foreign matter	Remove and inspect the lens. If dirty, contact a service technician.
	Lighting module is not functioning properly	Restart laptop computer to reset. If this does not work, contact a service technician.
Unfocused Image	Substrate is not within height focus limits of the camera	Jog Z-axis into focus. If this doesn't correct problem, contact a service technician.
	Lens is damaged or there is foreign matter on the lens	Remove and inspect the lens. If lens is damaged or dirty, contact a service technician.
No Lighting	Light is not connected to power	Make sure that the lighting module power cable is securely connected to the side of the dispense head controller.
Inaccurate dispensing after moving or replacing camera or lighting module	Camera-to-Needle offset is incorrect and vision system requires calibration	<ol style="list-style-type: none"> 1. Recalibrate camera. 2. Perform a Valve Offsets routine in FmXP. For assistance, refer to the <i>Fluidmove User Guide</i> or Online Help.
No display on monitor screen	Computer power switch is OFF	Turn ON (I) computer power switch.
	Laptop battery dead when using battery power	Connect to AC power source.

6 Specifications

6.1 Overview

The D-580 Series Dispensing System Specifications, facility requirements, and software requirements are presented in Table 6-1 through Table 6-4. These specifications are intended as a convenient reference for personnel planning, system relocation, installation, or operation, and others that may have an interest in system performance characteristics.

6.2 Safety First

Familiarity with the performance specifications and facility requirements in this section can provide information leading to safe operation of the dispensing system. For additional safety information, refer to [Section 2 - Safety](#).

6.3 Dispensing System Specifications

Table 6-1 DispenseMate 580 Series Specifications

System Specifications	
Dispensing Area	D-583: 325 mm x 325 mm D-585: 525 mm x 525 mm Z-Travel: 100 mm Dispense Head Payload: 3 kg Work Piece Payload: 2 kg
Motion System	Type: Brushless DC servo motors, closed-loop encoder feedback X-Y Velocity: 500 mm/s maximum Z-Axis Velocity: 500 mm/s maximum X-Y Repeatability: ± 0.025 mm (0.001-inch) Z-Axis Repeatability: ± 0.025 mm (0.001-inch) X-Y-Z Resolution: 0.010 mm (0.0004-inch) Positional Accuracy: ± 0.075 mm (0.003-inch)
Vision and Lighting (optional with advanced dispensing package)	Vision system with Automatic Pattern Recognition Image size: 6 mm (0.25-inch) standard Lighting: Programmable, red/blue LED, 256 steps
Computer	Windows-based laptop PC with Intel DuoCore T2400 1.83GHz processor 60Gb internal hard drive, 512Mb DDRII SDRAM ATI VGA card with 64Mb 8x DVD +/-RW 8x, 10/100/1000 Giga-Ethernet, 3 USB 2.0 ports, internal modem, 15.1" LCD display, Windows XP Professional SP2 Dimensions: 10.6" x 1.4" x 13.1" weight: 6lb (2.7Kg)
Software	User Environment: Fluidmove for Windows XP Operating System: Windows XP
Fluid Delivery Method	DispenseJet DJ-9000; Heli-flow DV-7000 and DV-8000 pumps; DV-01, DV-02, DV-03, DV-05, DV-07, DV-09
Dispenser Audible Noise Level	<70dB(A)

6.4 Dispensing System Facility Requirements

6.4.1 DispenseMate 583

Table 6-2 DispenseMate 583 Facility Requirements

DispenseMate 583 Facility Requirements	
System Footprint*	570 mm x 685 mm (22.4-inch x 26.9-inch)
Height	630 mm (26.5-inch)
Weight	45 kg (99.2 lbs.)
Compressed Air Dry; 40° F Dew Point	620 kPa (90 psi, 5.5 Bar), up to 85 l/min (3 SCFM) maximum, depending on configuration
Main Power Supply	100-240 VAC, 50/60 Hz, 10 A

*without tooling

6.4.2 DispenseMate 585

Table 6-3 DispenseMate 585 Requirements

DispenseMate 585 Facility Requirements	
System Footprint*	770 mm x 885 mm (30.3-inch x 34.8-inch)
Height	630 mm (26.5-inch)
Weight	70 kg (165.3 lbs.)
Compressed Air Dry; 40° F Dew Point	620 kPa (90 psi, 5.5 Bar), up to 85 l/min (3 SCFM) maximum, depending on configuration
Main Power Supply	100-240 VAC, 50/60 Hz, 10 A

*without tooling

6.4.3 Software

Table 6-4 DispenseMate 583/585 Software Requirements

DispenseMate 583/585 Software Requirements	
Software	Fluidmove for Windows XP (FmXP) Version 5.0 or later

Appendix A Block Diagrams

This Appendix describes available pneumatic and electrical block diagrams and dispensing system electronics that may help in understanding dispensing system operation and aid in troubleshooting. The diagrams referred to in this appendix are listed in Table A-1 and are shipped with the dispensing system manuals and accessories.

A.1 Safety First

Use of engineering drawings to disassemble, service, and reassemble the dispensing system promotes good safety practices only when used in conjunction with the precautions in [Section 2 - Safety](#) and other sections of this manual.



CAUTION! Only trained service technicians should perform troubleshooting, servicing, and parts replacement.

A.2 List of Pneumatic and Electrical Diagrams

Table A-1 Block Diagrams

Drawing Number	Title
7209550PD	Pneumatic Diagram, DispenseMate 583/585
7209550BD	Electrical Block Diagram, DispenseMate 583/585



NOTE Laminated 11" x 17" versions of diagrams referenced in Table A-1 are included with the dispensing system.

Appendix B Parts List

B.1 Overview

This appendix contains a list of spare parts (Table B-1) and exploded view drawings (Table B-2) that will aid in ordering replacement parts for the dispensing system.

B.2 Safety First

Before attempting to replace any parts, please review the precautions in [Section 2 - Safety](#).



CAUTION! Only trained service technicians should perform troubleshooting, servicing, and parts replacement.

B.3 Spare Parts List

Table B-1 Spare Parts List

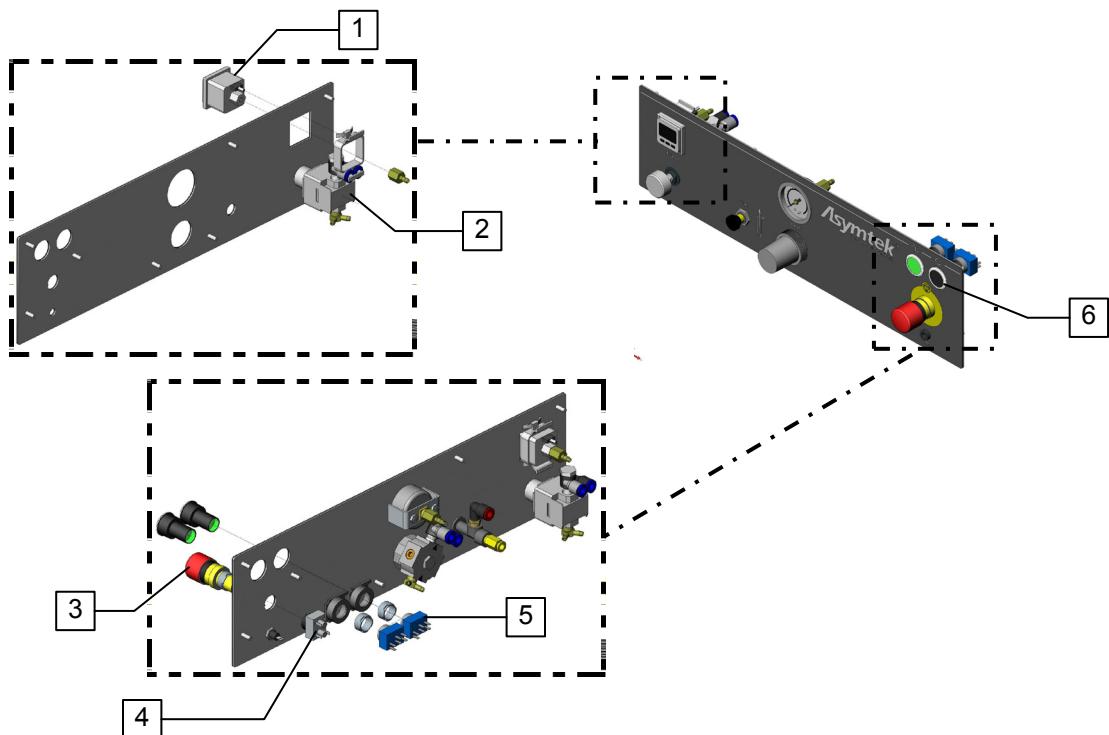
Part Number	Description
198202	Gauge, Digital Pressure
7206865	PWA, Servo Amp
198357	Battery, Non-Volatile
7207355	Sensor, Opto-interrupter GP1A10
199257	Plug-M, 14S, Screw Phoenix 3.81 mm
199280	Interlock Connector
7204074	Assembly, Regulator-filter, 160 psi, 1/4 NPT
7200147	Power Supply, 320W, 48VDC, UNIV
7200148	Power Supply, 100W, 24VDC, UNIV
7200901	PWA, DispenseMate Main, PRGMD
7206782	Probe, 1.9 x 90, HS
7205830	Assembly, Height Sensor
7209912	Regulator, Precision, 1.5-59 psi, SMC
7203262	Grease Kit
198945	Spring, Ext, 390DX.04WDX7.9LG
03-1727-00	Plunger, Needle Sensor
194701	Cover, Purge Cup, Clear
392116	Generator, Vacuum, m20
40-2100	Valve, 3-way, 24v
42-1001	O-ring, 1 7/8 OD x 1/16
7204803	Kit, Consumables
7205293	Assy, Tactile Switch
7216710	PWA, SDHC
7209895	Camera, GigaE
198864	Sensor, Z-home
7210099	Computer, Laptop

Part Number	Description
7209539	Cable, Ethernet, 2m
7209541	Cable, USB A-B, 2m
7209129	Hub, 7p, USB 2.0
58-0030	Cup, Dixie, 1 oz, 200/pkg

B.4 Illustrated Parts List

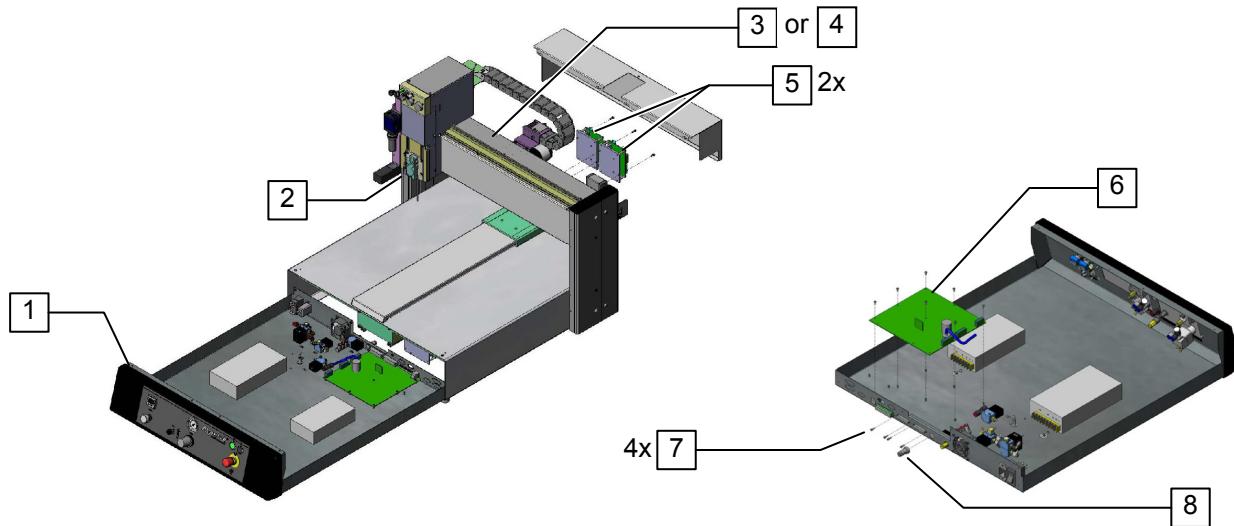
Table B-2 Illustrated Parts List

Figure Number	Title
Figure B-1	Parts List, Front Panel
Figure B-2	Parts List, Electronics Assembly
Figure B-3	Parts List, Electronics Assembly, continued
Figure B-4	Height Sensor



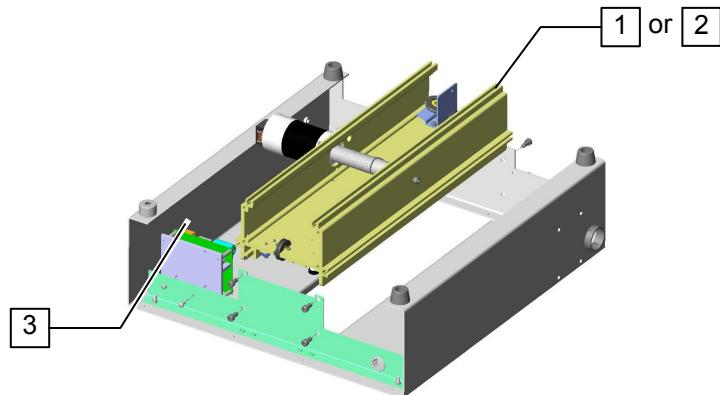
Item Number	Part Number	Description
1	198202	Gauge, Digital Pressure
2	7209912	Regulator, Precision, 1.5-59psi, SMC
3	198870	Switch, EMO Actuator
4	198871	Switch, EMO, Contact Block
5	7204788	Switch, Start, Round, Flush Button
6	7204789	Switch, Stop, Round, Button BLK

Figure B-1 Parts List, Front Panel



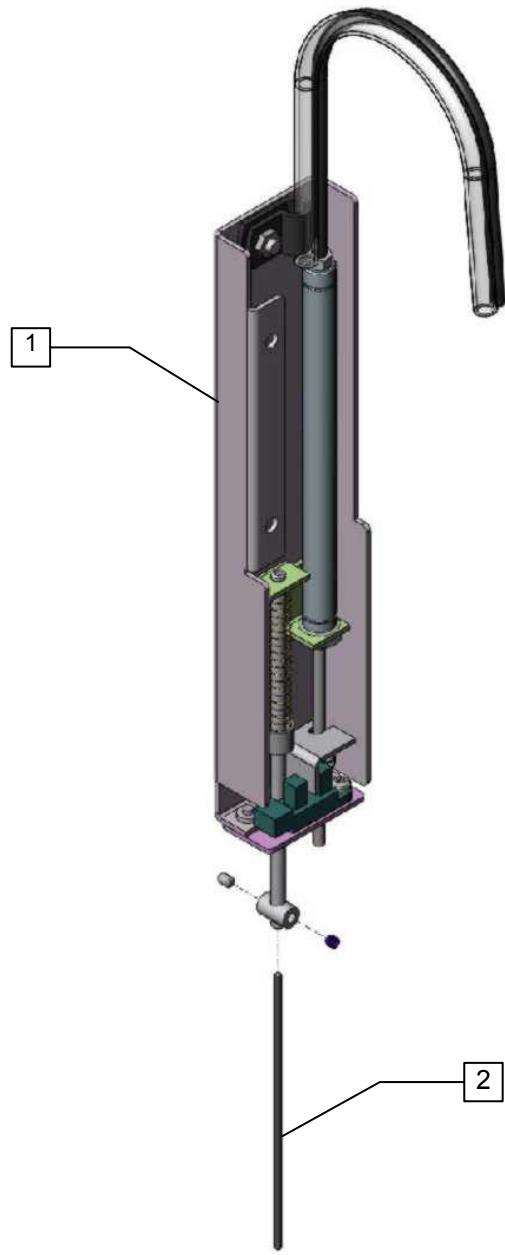
Item Number	Part Number	Description
1	7209164	Assembly, Electronics Pan
2	7201204	Assembly, Z-Head
3	7209530	Assembly, Drive, X, D-583
4	7209533	Assembly, Drive, X, D-585
5	7206865	Assembly, Servo AMP
6	7200901	PWA, DM Main, Programmed
7	55-5320	Hex Post, D-SUB, 4-40x5/16
8	199280	Interlock Connector

Figure B-2 Parts List, Electronics Assembly



Item Number	Part Number	Description
1	199002	Assembly, 325 Y
2	199003	Assembly, 525 Y
3	7206865	Assembly, Servo AMP

Figure B-3 Parts List, Electronics Assembly



Item Number	Part Number	Description
1	7205830	Height Sensor Assembly
2	7206782	Probe, 1.9 x 90, HS

Figure B-4 Height Sensor Assembly



Nordson ASYMTEK Headquarters
2762 Loker Avenue West
Carlsbad, CA 92010-6603 USA
Tel: (760) 431-1919

1-800-ASYMTEK (1-800-279-6835)